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Department of Agriculture • Department of Commerce • Department of Defense • Department of Energy  
Department of Housing and Urban Development • Department of the Interior • Department of State  
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Federal Emergency Management Agency • Library of Congress  
National Aeronautics and Space Administration • National Archives and Records Administration  
Tennessee Valley Authority

5 Established by Office of Management and Budget Circular A-16, the Federal Geographic Data Committee (FGDC)  
6 promotes the coordinated development, use, sharing, and dissemination of geographic data.

7 The FGDC is composed of representatives from the Departments of Agriculture, Commerce, Defense, Energy, Housing  
8 and Urban Development, the Interior, State, and Transportation; the Environmental Protection Agency; the Federal  
9 Emergency Management Agency; the Library of Congress; the National Aeronautics and Space Administration; the  
10 National Archives and Records Administration; and the Tennessee Valley Authority. Additional Federal agencies  
11 participate on FGDC subcommittees and working groups. The Department of the Interior chairs the committee.

12 FGDC subcommittees work on issues related to data categories coordinated under the circular. Subcommittees establish  
13 and implement standards for data content, quality, and transfer; encourage the exchange of information and the transfer  
14 of data; and organize the collection of geographic data to reduce duplication of effort. Working groups are established  
15 for issues that transcend data categories.

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Federal Geographic Data Committee

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**1. Name of Standard.** Content Standard for Digital Geospatial Metadata.

**2. Explanation.** This standard specifies the information content of metadata for a set of digital geospatial data. The purpose of the standard is to provide a common set of terminology and definitions for concepts related to these metadata. Metadata are data about the content, quality, condition, and other characteristics of data.

The Federal Geographic Data Committee (FGDC) initiated work on the standard in June, 1992, through a forum on geospatial metadata. At the forum, the participants agreed on the need for a standard on the information content of metadata about geospatial data. The committee accepted the offer of ASTM<sup>1</sup> Section D18.01.05 to develop a draft information content standard. This draft was slightly revised, and offered for public review from October 1992 to April 1993. Extensive comments were received from the public. The FGDC Standards Working Group revised the draft. The revised draft was provided for further review and testing in July 1993. Refined drafts were offered for review and testing in January and March 1994.

Since the Metadata Standard was adopted, it has been implemented by numerous Federal, state, and local agencies, companies, and groups. It has also been used by other nations as they develop their own national metadata standards. Proposed changes to the Metadata Standard have been suggested during the time since it was issued. Further, an implementor's workshop was held specifically to discuss strengths, weaknesses, and proposed improvements. Drawing on this body of knowledge, the FGDC proposes to modify the current Metadata Standard.

### 3. Relationship to Other Standards

The Spatial Data Transfer Standard (SDTS) was developed to allow the transfer of digital spatial data sets between spatial data software. The Content Standard for Digital Geospatial Metadata was developed to identify and define the metadata elements used to document digital geospatial data sets for many purposes. These include metadata to: 1) preserve the meaning and value of a data set; 2) contribute to a catalog or clearinghouse and; 3) aid in data transfer. Since the SDTS is a standard for data transfer, its primary metadata content is used to determine the fitness of the data set for the user's purpose. There is a close relationship between the Metadata Standard and the SDTS metadata elements contained in the Data Quality module, and in other locations inside of the SDTS transfer set. Since the Metadata Standard contains metadata used to search for digital spatial data sets through a clearinghouse (metadata for locating, describing access, use, and distribution), these elements may not be contained in the SDTS transfer set.

The original FGDC Metadata Standard has been used as the base document for International Organization for Standards (ISO) 15046 Part 15. The draft ISO Metadata Standard 15046 Part 15 is based on the original FGDC Metadata Standard but has had a number of changes made to it. The ISO draft is in the early stages of development and may have many more changes before it is completed. This proposed revision, therefore is not identical to the current ISO draft but is thought to be consistent with it. This revision contains changes that have little or no impact on existing implementations of the Standard. Because of the volatile nature of the ISO draft it would be premature to consider those changes at this time.

**4. Approving Authority.** The Federal Geographic Data Committee is the approving authority for the standard.

**5. Maintenance Authority.** The current maintenance authority for the standard is the FGDC Secretariat. Questions concerning the standard are to be addressed to the FGDC Secretariat, in care of the U.S. Geological Survey, 590 National Center, Reston, Virginia 20192.

**6. Related Documents.** A list of references is contained in Appendix C.

**7. Objectives.** The objectives of the standard are to provide a common set of terminology and definitions for the documentation of digital geospatial data. The standard establishes the names of data elements and compound elements (groups of data elements) to be used for these purposes, the definitions of these compound elements and data elements, and information about the values that are to be provided for the data elements.

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<sup>1</sup> formerly the American Society for Testing and Materials.

The major uses of metadata are:

- to maintain an organization's internal investment in geospatial data,
- to provide information about an organization's data holdings to data catalogues, clearinghouses, and brokerages, and
- to provide information needed to process and interpret data to be received through a transfer from an external source.

The information included in the standard was selected based on four roles that metadata play:

- availability -- data needed to determine the sets of data that exist for a geographic location.
- fitness for use -- data needed to determine if a set of data meets a specific need.
- access -- data needed to acquire an identified set of data.
- transfer -- data needed to process and use a set of data.

These roles form a continuum in which a user cascades through a pyramid of choices to determine what data are available, to evaluate the fitness of the data for use, to access the data, and to transfer and process the data. The exact order in which data elements are evaluated, and the relative importance of data elements, will not be the same for all users.

**8. Applicability.** This standard is for the documentation of geospatial data.

Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," was signed on April 11, 1994, by President William J. Clinton. Section 3, Development of a National Geospatial Data Clearinghouse, paragraph (b) states: "Standardized Documentation of Data. Beginning nine months from the date of this order, each agency shall document all new geospatial data it collects or produces, either directly or indirectly, using the standard under development by the FGDC, and make that standardized documentation electronically accessible to the Clearinghouse network. Within one year of the date of this order, agencies shall adopt a schedule, developed in consultation with the FGDC, for documenting, to the extent practicable, geospatial data previously collected or produced, either directly or indirectly, and making that data documentation electronically accessible to the Clearinghouse network." This standard is the data documentation standard referenced in the executive order.

In addition to use by the Federal Government, the FGDC invites and encourages organizations and persons from State, local, and tribal governments, the private sector, and non-profit organizations to use the standard to document their geospatial data. A major difficulty in the geospatial data community is the lack of information that helps prospective users to determine what data exist, the fitness of existing data for planned applications, and the conditions for accessing existing data, and to transfer data to a user's system. This standard, developed with aid of broad public participation, will help to ease these problems and to develop the National Spatial Data Infrastructure.

The standard was developed from the perspective of defining the information required by a prospective user to determine the availability of a set of geospatial data; to determine the fitness the set of geospatial data for an intended use; to determine the means of accessing the set of geospatial data; and to successfully transfer the set of geospatial data. As such, the standard establishes the names of data elements and compound elements to be used for these purposes: definitions of these data elements and compound elements, and information about the values that are to be provided for the data elements. The standard does not specify the means by which this information is organized in a computer system or in a data transfer, nor the means by which this information is transmitted, communicated, or presented to the user.<sup>2</sup>

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<sup>2</sup> The variety of means of organizing data in a computer, the differences among data providers to describe their data holdings because of varying institutional and technical capabilities, the rapid evolution of means to provide information through the Internet for different purposes, and the need to accommodate existing standards have guided the evolution of

**9. Specifications.** The standard provides specifications for terminology of data elements and compound elements, definitions for this terminology, and information about values to be provided for the data elements. Information about terms that are mandatory, mandatory under certain conditions, and optional (provided at the discretion of the data provider) is provided by the standard.

**10. Where to Obtain Copies.** Copies of this publication are available from the Federal Geographic Data Committee Secretariat, in care of the U.S. Geological Survey, 590 National Center, Reston, Virginia 20192; telephone (703) 648-5514; facsimile (703) 648-5755; Internet (electronic mail) [gdc@usgs.gov](mailto:gdc@usgs.gov). The text also is available from anonymous File Transfer Protocol (anonymous ftp) server [fgdc.er.usgs.gov](ftp://fgdc.er.usgs.gov).

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this decision. The FGDC is pursuing several implementation methods.

## Organization of the Standard

### Numbered Sections

The standard is organized in a hierarchy of data elements and compound elements that define the information content for metadata to document a set of digital geospatial data. The starting point is "metadata" (section 0). The compound element "metadata" is composed of other compound elements representing different concepts about the data set. Each of these compound elements has a numbered section in the standard. In each numbered section, these compound elements are defined by other compound elements and data elements. The section "contact information" is a special section that specifies the data elements for contacting individuals and organizations. This section is used by other sections, and is defined once for convenience.

Each section begins with the name and definition of the compound element that defines the section. The name and definition are followed by production rules (see below) that define this compound element in terms of data elements, either directly or by the use of intermediate compound elements. When intermediate compound elements are used, the production rules for these elements also are provided in this part of the section.

Additional information about the organization of the Standard follows:

- The production rules are followed by a list of names and definitions of compound elements and data elements used in the section.
- Section and element numbers are provided for human navigation of the standard. They are neither authoritative nor intended for use in implementation and are subject to change in future revisions of the standard.
- Line numbers are included as an easy reference for review and comments. They will become part of the revised standard.

### Compound Elements

A compound element is a group of data elements and other compound elements. All compound elements are described by data elements, either directly or through intermediate compound elements. Compound elements represent higher-level concepts that cannot be represented by individual data elements. The form for the definition of compound elements is:

Compound element name -- definition.  
Type: compound  
Short Name:

The type of "compound" uniquely identifies the compound elements in the lists of terms and definitions.

Short names consisting of eight alphabetic characters or less are included to assist in user implementation of the standard.

### Data Elements

A data element is a logically primitive item of data. The entry for a data element includes the name of the data element, the definition of the data element, a description of the values that can be assigned to the data element, and a short name for the data element. The form for the definition of the data elements is:

Data element name -- definition.  
Type:  
Domain:  
Short Name:

The information about the values for the data elements include a description of the type of the value, and a description of the domain of the valid values. The type of the data element describes the kind of value to be provided. The choices are "integer" for integer numbers, "real" for real numbers, "text" for ASCII characters, "date" for day of the year, and "time" for time of the day.

The domain describes valid values that can be assigned to the data element. The domain may specify a list of valid values, references to lists of valid values, or restrictions on the range of values that can be assigned to a data element.

The domain also may note that the domain is free from restrictions, and any values that can be represented by the "type" of the data element can be assigned. These unrestricted domains are represented by the use of the word "free" followed by the type of the data element (that is, free text, free date, free real, free time, free integer).

Some domains can be partly, but not completely, specified. For example, there are several widely used data transfer formats, but there may be many more that are less well known. To allow a producer to describe its data in these circumstances, the convention of providing a list of values followed by the designation of a "free" domain was used. In these cases, assignments of values shall be made from the provided domain when possible. When not possible, providers may create and assign their own value. A created value shall not redefine a value provided by the standard.

Short names consisting of eight alphabetic characters or less are included to assist in user implementation of the standard.

Another issue is the representation of null values (representing such concepts as "unknown") in the domain. While this is relatively simple for textual entries (one would enter the text "Unknown"), it is not as simple for the integer, real, date, and time types. (For example, which integer value means "unknown"?). Because conventions for providing this information vary among implementations, the standard specifies what concepts shall be represented, but does not mandate a means for representing them.

In addition to the values to be represented, the form of representation also is important, especially to applications that will manipulate the data elements. The following conventions for forms of values for data elements shall be used:

#### Calendar Dates (Years, Months, and Days)

- A.D. Era to December 31, 9999 A.D. -- Values for day and month of year, and for years, shall follow the calendar date convention (general forms of YYYY for years; YYYYMM for month of a year (with month being expressed as an integer), and YYYYMMDD for a day of the year) specified in American National Standards Institute, 1986, Representation for calendar date and ordinal date for information interchange (ANSI X3.30-1985): New York, American National Standards Institute (adopted as Federal Information Processing Standard 4-1).

- B.C. Era to 9999 B.C. -- Values for day and month of year, and for years, shall follow the calendar date convention, preceded by the lower case letters "bc" (general forms of bcYYYY for years; bcYYYYMM for month of a year (with month being expressed as an integer), and bcYYYYMMDD for a day of the year).

- B.C. Era before 9999 B.C. -- Values for the year shall consist of as many numeric characters as needed to represent the number of the year B.C., preceded by lower case letters "cc" (general form of ccYYYYYYY...).

- A.D. Era after 9999 A.D. -- Values for the year shall consist of as many numeric characters as needed to represent number of the year A.D., preceded by the lower case letters "cd" (general form of cdYYYYYYY...).

#### Time of Day (Hours, Minutes, and Seconds)

- Because some geospatial data and related applications are sensitive to time of day information, three conventions are permitted. Only one convention shall be used for metadata for a data set. The conventions are:

- Local Time. For producers who wish to record time in local time, values shall follow the 24-hour timekeeping system for local time of day in the hours, minutes, seconds, and decimal fractions of a second (to the precision



desired) without separators convention (general form of HHMMSSSS) specified in American National Standards Institute, 1986, Representations of local time of day for information interchange (ANSI X3.43-1986): New York, American National Standards Institute (adopted as Federal Information Processing Standard 58-1).

- Local Time with Time Differential Factor. For producers who wish to record time in local time and the relationship to Universal Time (Greenwich Mean Time), values shall follow the 24-hour timekeeping system for local time of day in hours, minutes, seconds, and decimal fractions of a second (to the resolution desired) without separators convention. This value shall be followed, without separators, by the time differential factor. The time differential factor expresses the difference in hours and minutes between local time and Universal Time. It is represented by a four-digit number preceded by a plus sign (+) or minus sign (-), indicating hours and minutes local time is ahead of or behind Universal Time, respectively. The general form is HHMMSSSSshhmm, where HHMMSSSS is the local time using 24-hour timekeeping (expressed to the precision desired), 's' is the plus or minus sign for the time differential factor, and hhmm is the time differential factor. (This option allows producers to record local time and time zone information. For example, Eastern Standard Time has a time differential factor of -0500, Central Standard Time has a time differential factor of -0600, Eastern Daylight Time has a time differential factor of -0400, and Central Daylight Time has a time differential factor of -0500.) This option is specified in American National Standards Institute, 1975, Representations of universal time, local time differentials, and United States time zone reference for information interchange (ANSI X3.51-1975): New York, American National Standards Institute (adopted as Federal Information Processing Standard 59).
- Universal Time (Greenwich Mean Time). For producers who wish to record time in Universal Time (Greenwich Mean Time), values shall follow the 24-hour timekeeping system for Universal Time of day in hours, minutes, seconds, and decimal fractions of a second (expressed to the precision desired) without separators convention, with the upper case letter "Z" directly following the low-order (or extreme right hand) time element of the 24-hour clock time expression. The general form is HHMMSSSSZ, where HHMMSSSS is Universal Time using 24-hour timekeeping, and Z is the letter "Z". This option is specified in American National Standards Institute, 1975, Representations of universal time, local time differentials, and United States time zone reference for information interchange (ANSI X3.51-1975): New York, American National Standards Institute (adopted as Federal Information Processing Standard 59).

#### Latitude and Longitude

- Values for latitude and longitude shall be expressed as decimal fractions of degrees. Whole degrees of latitude shall be represented by a two-digit decimal number ranging from 0 through 90. Whole degrees of longitude shall be represented by a three-digit decimal number ranging from 0 through 180. When a decimal fraction of a degree is specified, it shall be separated from the whole number of degrees by a decimal point. Decimal fractions of a degree may be expressed to the precision desired.
- Latitudes north of the equator shall be specified by a plus sign (+), or by the absence of a minus sign (-), preceding the two digits designating degrees. Latitudes south of the Equator shall be designated by a minus sign (-) preceding the two digits designating degrees. A point on the Equator shall be assigned to the Northern Hemisphere.
- Longitudes east of the prime meridian shall be specified by a plus sign (+), or by the absence of a minus sign (-), preceding the three digits designating degrees of longitude. Longitudes west of the meridian shall be designated by minus sign (-) preceding the three digits designating degrees. A point on the prime meridian shall be assigned to the Eastern Hemisphere. A point on the 180th meridian shall be assigned to the Western Hemisphere. One exception to this last convention is permitted. For the special condition of describing a band of latitude around the earth, the East Bounding Coordinate data element shall be assigned the value +180 (180) degrees.
- Any spatial address with a latitude of +90 (90) or -90 degrees will specify the position at the North or South Pole, respectively. The component for longitude may have any legal value.

With the exception of the special condition described above, this form is specified in Department of Commerce, 1986, Representation of geographic point locations for information interchange (Federal Information Processing Standard 70-1): Washington, Department of Commerce, National Institute of Standards and Technology.

#### Network Addresses and File Names

Values for file names, network addresses for computer systems, and related services should follow the Uniform Resource Locator convention of the Internet when possible. See <http://www.ncsa.uiuc.edu/demoweb/url-primer.html> for additional details about the Uniform Resource Locator.

#### Optionality

The standard categorizes elements as being mandatory, mandatory-if-applicable, or optional as follows:

- Mandatory elements must be provided.
- Mandatory-if-applicable elements must be provided if the data set exhibits the defined characteristic.
- Optional elements are provided at the discretion of the metadata producer.

The optionality of a section or compound element always takes precedence over the elements that it contains. Once a section or compound element is recognized by the data set producer as applicable, then the optionality of its subordinate elements is to be interpreted. See Production Rules section for additional interpretive guidance.

Mandatory sections in the standard have some elements that are always required for all types of geospatial data sets. For comparison with other metadata standards, these elements are referred to as "core" elements.

#### Production Rules

A production rule specifies the relationship between a compound element, and data elements and other (lower-level) compound elements. Each production rule has a left side (identifier) and a right side (expression) connected by the symbol "=", meaning that the term on the left side is replaced by or produces the term on the right side. Terms on the right side are either other compound elements or individual data elements. By making substitutions using matching terms in the production rules, one can explain higher-level concepts using data elements. The symbols used in the production rules have the following meaning:

<u>Symbol</u>	<u>Meaning</u>
---------------	----------------

=	is replaced by, produces, consists of
---	---------------------------------------

+	and
---	-----

[ ]	selection - select one term from the list of enclosed terms (exclusive or). Terms are separated by " "
-----	--

m{ }n	iteration - the term(s) enclosed is(are) repeated from "m" to "n" times
-------	---

()	optional - the term(s) enclosed is(are) optional
----	--

#### Examples:

a = b + c	"a consists of b and c"
-----------	-------------------------

a = [b   c]	"a consists of one of b or c"
-------------	-------------------------------

a = 4{b}6	"a consists of four to six occurrences of b"
-----------	--

a = b + (c)	"a consists of b and optionally c"
-------------	------------------------------------

Interpreting the production rules:

The terms bounded by parentheses, "(" and ")", are optional and are provided at the discretion of the data producer. If a producer chooses to provide information enclosed by parentheses, the producer shall follow the production rules for the enclosed information. For example, if the producer decides to provide the optional information described in the term:

(a + b + c)

the producer shall provide a and b and c.

Only for terms bounded by parentheses does the producer have the discretion of deciding whether or not to provide the information.

The variation among the ways in which geospatial data is produced and distributed, the fact that all geospatial data does not have the same characteristics, and the issue that all details of data sets that are in work or are planned may not be decided, caused the need to express the concept of "mandatory if applicable." This concept means that if the data set exhibits (or, for data sets that are in work or planned, it is known that the data set will exhibit) a defined characteristic, then the producer shall provide the information needed to describe that characteristic. This concept is described by the production rule:

0{ term }1

#### Extensibility

Extended elements may be defined by a data set producer or a user community. Extended elements are elements outside the standard, but needed by the data set producer. If extended elements are created, they must follow the guidelines in Appendix D, Guidelines for creating extended elements to the Content Standard for Digital Geospatial Metadata.

328 Metadata

329 0 Metadata -- data about the content, quality, condition, and other characteristics of data.

330 Type: compound

331 Short Name: metadata

332 Metadata =

333 Identification\_Information +

334 0{Data\_Quality\_Information}1 +

335 0{Spatial\_Data\_Organization\_Information}1 +

336 0{Spatial\_Reference\_Information}1 +

337 0{Entity\_and\_Attribute\_Information}1 +

338 0{Distribution\_Information}n +

339 Metadata\_Reference\_Information

340 *(Sections 1 through 7 define the terms on the right side of the production rule.)*

341 Identification Information

342 1 Identification Information -- basic information about the data set.

343 Type: compound

344 Short Name: idinfo

345 Identification\_Information =

346 Citation +

347 Description +

348 Time\_Period\_of\_Content +

349 Status +

350 Spatial\_Domain +

351 Keywords +

352 Access\_Constraints +

353 Use\_Constraints +

354 (Point\_of\_Contact) +

355 (1{Browse\_Graphic}n) +

356 (Data\_Set\_Credit) +

357 (Security\_Information) +

358 (Native\_Data\_Set\_Environment) +

359 (1{Cross\_Reference}n)

360 Citation =

361 Citation\_Information (*see section 8 for production rules*)

362 Description =

363 Abstract +

364 Purpose +

365 (Supplemental\_Information)

366 Time\_Period\_of\_Content =

367 Time\_Period\_Information (*see section 9 for production rules*) +

368 Currentness\_Reference

369 Status =

370 Progress +

371 Maintenance\_and\_Update\_Frequency

372 Spatial\_Domain =

373 Bounding\_Coordinates +

374 (1{Data\_Set\_G-Polygon}n)

375 Bounding\_Coordinates =

376 West\_Bounding\_Coordinate +

377 East\_Bounding\_Coordinate +

378 North\_Bounding\_Coordinate +

379 South\_Bounding\_Coordinate

380 Data\_Set\_G-Polygon =

381 Data\_Set\_G-Polygon\_Outer\_G-Ring +

382 0{Data\_Set\_G-Polygon\_Exclusion\_G-Ring}n

383 Data\_Set\_G-Polygon\_Outer\_G-Ring =

384 [4{G-Ring\_Point}n | G-Ring]

385	Data_Set_G-Polygon_Exclusion_G-Ring =	
386		[4{ G-Ring_Point }n   G-Ring]
387	G-Ring_Point =	
388		G-Ring_Latitude +
389		G-Ring_Longitude
390	Keywords =	
391		1{Theme}n +
392		0{Place}n +
393		0{Stratum}n +
394		0{Temporal}n
395	Theme =	
396		Theme_Keyword_Thesaurus +
397		1{Theme_Keyword}n
398	Place =	
399		Place_Keyword_Thesaurus +
400		1{Place_Keyword}n
401	Stratum =	
402		Stratum_Keyword_Thesaurus +
403		1{Stratum_Keyword}n
404	Temporal =	
405		Temporal_Keyword_Thesaurus +
406		1{Temporal_Keyword}n
407	Point_of_Contact =	
408		Contact_Information <i>(see section 10 for production rules)</i>
409	Browse_Graphic =	
410		Browse_Graphic_File_Name +
411		Browse_Graphic_File_Description +
412		Browse_Graphic_File_Type
413	Security_Information =	
414		Security_Classification_System +
415		Security_Classification +
416		Security_Handling_Description
417	Cross_Reference =	
418		Citation_Information <i>(see section 8 for production rules)</i>
419	1.1 Citation -- information to be used to reference the data set.	
420	Type: compound	
421	Short Name: citation	
422	1.2 Description -- a characterization of the data set, including its intended use and limitations.	
423	Type: compound	
424	Short Name: descript	
425	1.2.1 Abstract -- a brief narrative summary of the data set.	
426	Type: text	

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427		Domain: free text
428		Short Name: abstract
429		
430	1.2.2	Purpose -- a summary of the intentions with which the data set was developed.
431		Type: text
432		Domain: free text
433		Short Name: purpose
434		
435	1.2.3	Supplemental Information -- other descriptive information about the data set.
436		Type: text
437		Domain: free text
438		Short Name: supplinf
439		
440	1.3	Time Period of Content -- time period(s) for which the data set corresponds to the ground.
441		Type: compound
442		Short Name: timeperd
443	1.3.1	Currentness Reference -- the basis on which the time period of content information is determined.
444		Type: text
445		Domain: "ground condition" "publication date" free text
446		Short Name: current
447	1.4	Status -- the state of and maintenance information for the data set.
448		Type: compound
449		Short Name: status
450	1.4.1	Progress -- the state of the data set.
451		Type: text
452		Domain: "Complete" "In work" "Planned"
453		Short Name: progress
454	1.4.2	Maintenance and Update Frequency -- the frequency with which changes and additions are made to the data set after the initial data set is completed.
455		Type: text
456		Domain: "Continually" "Daily" "Weekly" "Monthly" "Annually" "Unknown" "As needed" "Irregular"
457		"None planned" free text
458		
459		Short Name: update
460	1.5	Spatial Domain - the geographic areal domain of the data set.
461		Type: compound
462		Short Name: spdom
463	1.5.1	Bounding Coordinates - the limits of coverage of a data set expressed by latitude and longitude values in the order western-most, eastern-most, northern-most, and southern-most. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate shall be assigned the value -180.0, and the East Bounding Coordinate shall be assigned the value 180.0
464		
465		
466		
467		Type: compound
468		Short Name: bounding
469	1.5.1.1	West Bounding Coordinate -- western-most coordinate of the limit of coverage expressed in longitude.
470		Type: real
471		Domain: -180.0 <= West Bounding Coordinate < 180.0
472		Short Name: westbc
473	1.5.1.2	East Bounding Coordinate -- eastern-most coordinate of the limit of coverage expressed in longitude.

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474		Type: real
475		Domain: -180.0 <= East Bounding Coordinate <= 180.0
476		Short Name: eastbc
477	1.5.1.3	North Bounding Coordinate -- northern-most coordinate of the limit of coverage expressed in latitude.
478		Type: real
479		Domain: -90.0 <= North Bounding Coordinate <= 90.0; North Bounding Coordinate >=
480		South Bounding Coordinate
481		Short Name: northbc
482	1.5.1.4	South Bounding Coordinate -- southern-most coordinate of the limit of coverage expressed in latitude.
483		Type: real
484		Domain: -90.0 <= South Bounding Coordinate <= 90.0; South Bounding Coordinate <=
485		North Bounding Coordinate
486		Short Name: southbc
487	1.5.2	Data Set G-Polygon -- coordinates defining the outline of an area covered by a data set.
488		Type: compound
489		Short Name: dsgpoly
490	1.5.2.1	Data Set G-Polygon Outer G-Ring -- the closed nonintersecting boundary of an interior area.
491		Type: compound
492		Short Name: dsgpolyo
493	1.5.2.1.1	G-Ring Point -- a single geographic location.
494		Type: compound
495		Short Name: grngpoin
496	1.5.2.1.1.1	G-Ring Latitude -- the latitude of a point of the g-ring.
497		Type: real
498		Domain: -90.0 <= G-Ring Latitude <= 90.0
499		Short Name: gringlat
500	1.5.2.1.1.2	G-Ring Longitude -- the longitude of a point of the g-ring.
501		Type: real
502		Domain: -180.0 <= G-Ring Longitude < 180.0
503		Short Name: gringlon
504	1.5.2.1.2	G-Ring -- a set of ordered pairs of floating-point numbers, separated by commas, in which the first
505		number in each pair is the longitude of a point and the second is the latitude of the point. Longitude
506		and latitude are specified in decimal degrees with north latitudes positive and south negative, east
507		longitude positive and west negative
508		Type: text
509		Domain: -90<= Latitude_elements <= 90,-180 <= Longitude_Elements <= 180
510		Short Name: gring
511	1.5.2.2	Data Set G-Polygon Exclusion G-Ring -- the closed nonintersecting boundary of a void area (or "hole" in
512		an interior area.
513		Type: compound
514		Short Name: dsgpolyx
515	1.6	Keywords -- words or phrases summarizing an aspect of the data set.
516		Type: compound
517		Short Name: keywords



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- 518 1.6.1 Theme -- subjects covered by the data set (for a list of some commonly-used thesauri, see Part IV:  
519 Subject/index term sources *in* Network Development and MARC Standards Office, 1988, USMARC code  
520 list for relators, sources, and description conventions: Washington, Library of Congress).  
521 Type: compound  
522 Short Name: theme
- 523 1.6.1.1 Theme Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative  
524 source of theme keywords.  
525 Type: text  
526 Domain: "None" free text  
527 Short Name: themekt
- 528 1.6.1.2 Theme Keyword -- common-use word or phrase used to describe the subject of the data set.  
529 Type: text  
530 Domain: free text  
531 Short Name: themekey
- 532 1.6.2 Place -- geographic locations characterized by the data set.  
533 Type: compound  
534 Short Name: place
- 535 1.6.2.1 Place Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative source  
536 of place keywords.  
537 Type: text  
538 Domain: "None" "Geographic Names Information System" free text  
539 Short Name: placekt
- 540 1.6.2.2 Place Keyword -- the geographic name of a location covered by a data set.  
541 Type: text  
542 Domain: free text  
543 Short Name: placekey
- 544 1.6.3 Stratum -- layered, vertical locations characterized by the data set.  
545 Type: compound  
546 Short Name: stratum
- 547 1.6.3.1 Stratum Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative  
548 source of stratum keywords.  
549 Type: text  
550 Domain: "None" free text  
551 Short Name: stratkt  
552
- 553 1.6.3.2 Stratum Keyword -- the name of a vertical location used to describe the locations covered by a data set.  
554 Type: text  
555 Domain: free text  
556 Short Name: stratkey
- 557 1.6.4 Temporal -- time period(s) characterized by the data set.  
558 Type: compound  
559 Short Name: temporal
- 560 1.6.4.1 Temporal Keyword Thesaurus -- reference to a formally registered thesaurus or a similar authoritative  
561 source of temporal keywords.  
562 Type: text  
563 Domain: "None" free text

564	Short Name: tempkt	
565	1.6.4.2	Temporal Keyword -- the name of a time period covered by a data set.
566	Type: text	
567	Domain: free text	
568	Short Name: tempkey	
569	1.7	Access Constraints -- restrictions and legal prerequisites for accessing the data set. These include any access
570		constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or
571		limitations on obtaining the data set.
572	Type: text	
573	Domain: "None" free text	
574	Short Name: accconst	
575	1.8	Use Constraints -- restrictions and legal prerequisites for using the data set after access is granted. These include
576		any access constraints applied to assure the protection of privacy or intellectual property, and any special
577		restrictions or limitations on obtaining the data set.
578	Type: text	
579	Domain: "None" free text	
580	Short Name: useconst	
581	1.9	Point of Contact -- contact information for an individual or organization that is knowledgeable about the data set.
582	Type: compound	
583	Short Name: ptcontac	
584	1.10	Browse Graphic -- a graphic that provides an illustration of the data set. The graphic should include a legend
585		for
586		interpret
587		ing
588		the
589		graphic
590		.
591	Type: compound	
592	Short Name: browse	
593	1.10.1	Browse Graphic File Name -- name of a related graphic file that provides an illustration of the data set.
594	Type: text	
595	Domain: free text	
596	Short Name: browsen	
597	1.10.2	Browse Graphic File Description -- a text description of the illustration.
598	Type: text	
599	Domain: free text	
600	Short Name: browsed	
601	1.10.3	Browse Graphic File Type -- graphic file type of a related graphic file.
602	Type: text	
603	Domain: domain values in the table below; free text	
604	Short Name: browsset	
605	Domain	
606	<u>Value</u>	<u>Definition</u>
607	"CGM"	Computer Graphics Metafile
608	"EPS"	Encapsulated Postscript format

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609	"GIF"	Graphic Interchange Format
610	"JPEG"	Joint Photographic Experts Group format
611	"PBM"	Portable Bit Map format
612	"PS"	Postscript format
613	"TIFF"	Tagged Image File Format
614	"XWD"	X-Windows Dump
615		
616	1.11 Data Set Credit -- recognition of those who contributed to the data set.	
617	Type: text	
618	Domain: free text	
619	Short Name: datacred	
620	1.12 Security Information -- handling restrictions imposed on the data set because of national security, privacy, or	
621	other concerns.	
622	Type: compound	
623	Short Name: secinfo	
624	1.12.1 Security Classification System -- name of the classification system.	
625	Type: text	
626	Domain: free text	
627	Short Name: secsys	
628	1.12.2 Security Classification -- name of the handling restrictions on the data set.	
629	Type: text	
630	Domain: "Top secret" "Secret" "Confidential" "Restricted" "Unclassified" "Sensitive" free text	
631	Short Name: secclass	
632	1.12.3 Security Handling Description -- additional information about the restrictions on handling the data set.	
633	Type: text	
634	Domain: free text	
635	Short Name: sechandl	
636	1.13 Native Data Set Environment -- a description of the data set in the producer's processing environment,	
637	including items such as the name of the software (including version), the computer operating system, file name	
638	(including host-, path-, and filenames), and the data set size.	
639	Type: text	
640	Domain: free text	
641	Short Name: native	
642	1.14 Cross Reference -- information about other, related data sets that are likely to be of interest.	
643	Type: compound	
644	Short Name: crossref	

## Data Quality Information

- 2 Data Quality Information -- a general assessment of the quality of the data set. (Recommendations on information to be reported and tests to be performed are found in "Spatial Data Quality," which is chapter 3 of part 1 in Department of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal Information Processing Standard 173): Washington, Department of Commerce, National Institute of Standards and Technology.)  
Type: compound  
Short Name: dataqual

Data\_Quality\_Information =

0{Attribute\_Accuracy}1 +  
Logical\_Consistency\_Report +  
Completeness\_Report +  
0{Positional\_Accuracy}1 +  
Lineage +  
(Cloud\_Cover)

Attribute\_Accuracy =

Attribute\_Accuracy\_Report +  
(1{Quantitative\_Attribute\_Accuracy\_Assessment}n)

Quantitative\_Attribute\_Accuracy\_Assessment =

Attribute\_Accuracy\_Value +  
Attribute\_Accuracy\_Explanation

Positional\_Accuracy =

0{Horizontal\_Positional\_Accuracy}1 +  
0{Vertical\_Positional\_Accuracy}1

Horizontal\_Positional\_Accuracy =

Horizontal\_Positional\_Accuracy\_Report +  
(1{Quantitative\_Horizontal\_Positional\_Accuracy\_Assessment}n)

Quantitative\_Horizontal\_Positional\_Accuracy\_Assessment =

Horizontal\_Positional\_Accuracy\_Value +  
Horizontal\_Positional\_Accuracy\_Explanation

Vertical\_Positional\_Accuracy =

Vertical\_Positional\_Accuracy\_Report +  
(1{Quantitative\_Vertical\_Positional\_Accuracy\_Assessment}n)

Quantitative\_Vertical\_Positional\_Accuracy\_Assessment =

Vertical\_Positional\_Accuracy\_Value +  
Vertical\_Positional\_Accuracy\_Explanation

Lineage =

0{Source\_Information}n +  
1{Process\_Step}n

Source\_Information =

Source\_Citation +  
0{Source\_Scale\_Denominator}1 +  
Type\_of\_Source\_Media +  
Source\_Time\_Period\_of\_Content +

689		Source_Citation_Abbreviation +
690		Source_Contribution
691	Source_Citation =	
692		Citation_Information ( <i>see section 8 for production rules</i> )
693	Source_Time_Period_of_Content =	
694		Time_Period_Information ( <i>see section 9 for production rules</i> ) +
695		Source_Currentness_Reference
696	Process_Step =	
697		Process_Description +
698		0{Source_Used_Citation_Abbreviation}n +
699		Process_Date +
700		(Process_Time) +
701		0{Source_Produced_Citation_Abbreviation}n +
702		(Process_Contact)
703	Process_Contact =	
704		Contact_Information ( <i>see section 10 for production rules</i> )
705	2.1	Attribute Accuracy -- an assessment of the accuracy of the identification of entities and assignment of attribute
706		values in the data set.
707		Type: compound
708		Short Name: attracc
709	2.1.1	Attribute Accuracy Report -- an explanation of the accuracy of the identification of the entities and
710		assignments of values in the data set and a description of the tests used.
711		Type: text
712		Domain: free text
713		Short Name: attraccr
714	2.1.2	Quantitative Attribute Accuracy Assessment -- a value assigned to summarize the accuracy of the
715		identification of the entities and assignments of values in the data set and the identification of the test that
716		yielded the value.
717		Type: compound
718		Short Name: qattracc
719	2.1.2.1	Attribute Accuracy Value -- an estimate of the accuracy of the identification of the entities and
720		assignments of attribute values in the data set.
721		Type: text
722		Domain: "Unknown" free text
723		Short Name: attraccv
724	2.1.2.2	Attribute Accuracy Explanation -- the identification of the test that yielded the Attribute Accuracy Value.
725		Type: text
726		Domain: free text
727		Short Name: attracce
728	2.2	Logical Consistency Report -- an explanation of the fidelity of relationships in the data set and tests used.
729		Type: text
730		Domain: free text
731		Short Name: logic
732	2.3	Completeness Report -- information about omissions, selection criteria, generalization, definitions used, and

733		other rules used to derive the data set.
734		Type: text
735		Domain: free text
736		Short Name: complete
737	2.4	Positional Accuracy -- an assessment of the accuracy of the positions of spatial objects.
738		Type: compound
739		Short Name: posacc
740	2.4.1	Horizontal Positional Accuracy -- an estimate of accuracy of the horizontal positions of the spatial objects.
741		Type: compound
742		Short Name: horizpa
743	2.4.1.1	Horizontal Positional Accuracy Report -- an explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.
744		
745		Type: text
746		Domain: free text
747		Short Name: horizpar
748	2.4.1.2	Quantitative Horizontal Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of the horizontal coordinate measurements and the identification of the test that yielded the value.
749		
750		
751		Type: compound
752		Short Name: qhorizpa
753	2.4.1.2.1	Horizontal Positional Accuracy Value -- an estimate of the accuracy of the horizontal coordinate measurements in the data set expressed in (ground) meters.
754		
755		Type: real
756		Domain: free real
757		Short Name: horizpav
758		
759	2.4.1.2.2	Horizontal Positional Accuracy Explanation -- the identification of the test that yielded the Horizontal Positional Accuracy Value.
760		
761		Type: text
762		Domain: free text
763		Short Name: horizpae
764	2.4.2	Vertical Positional Accuracy -- an estimate of accuracy of the vertical positions in the data set.
765		Type: compound
766		Short Name: vertacc
767	2.4.2.1	Vertical Positional Accuracy Report -- an explanation of the accuracy of the vertical coordinate measurements and a description of the tests used.
768		
769		Type: text
770		Domain: free text
771		Short Name: vertaccr
772	2.4.2.2	Quantitative Vertical Positional Accuracy Assessment -- numeric value assigned to summarize the accuracy of vertical coordinate measurements and the identification of the test that yielded the value.
773		
774		Type: compound
775		Short Name: qvertpa
776	2.4.2.2.1	Vertical Positional Accuracy Value -- an estimate of the accuracy of the vertical coordinate measurement in the data set expressed in (ground) meters.
777		
778		Type: real

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779		Domain: free real
780		Short Name: vertaccv
781	2.4.2.2.2	Vertical Positional Accuracy Explanation -- the identification of the test that yielded the Vertical
782		Positional Accuracy Value.
783		Type: text
784		Domain: free text
785		Short Name: vertacce
786	2.5	Lineage -- information about the events, parameters, and source data which constructed the data set, and
787		information about the responsible parties.
788		Type: compound
789		Short Name: lineage
790	2.5.1	Source Information -- list of sources and a short discussion of the information contributed by each.
791		Type: compound
792		Short Name: srcinfo
793	2.5.1.1	Source Citation -- reference for a source data set.
794		Type: compound
795		Short Name: srccite
796	2.5.1.2	Source Scale Denominator -- the denominator of the representative fraction on a map (for example, on a
797		1:24,000-scale map, the Source Scale Denominator is 24000).
798		Type: integer
799		Domain: Source Scale Denominator > 1
800		Short Name: srcscale
801	2.5.1.3	Type of Source Media -- the medium of the source data set.
802		Type: text
803		Domain: "paper" "stable-base material" "microfiche" "microfilm" "audiocassette" "chart" "filmstrip"
804		"transparency" "videocassette" "videodisc" "videotape" "physical model" "computer program" "disc"
805		"cartridge tape" "magnetic tape" "online" "CD-ROM" "electronic bulletin board" "electronic mail
806		system" free text
807		Short Name: typesrc
808	2.5.1.4	Source Time Period of Content -- time period(s) for which the source data set corresponds to the ground.
809		Type: compound
810		Short Name: srctime
811	2.5.1.4.1	Source Currentness Reference -- the basis on which the source time period of content information of
812		the source data set is determined.
813		Type: text
814		Domain: "ground condition" "publication date" free text
815		Short Name: srccurr
816	2.5.1.5	Source Citation Abbreviation -- short-form alias for the source citation.
817		Type: text
818		Domain: free text
819		Short Name: srccitea
820	2.5.1.6	Source Contribution -- brief statement identifying the information contributed by the source to the data
821		set.
822		Type: text
823		Domain: free text

824		Short Name: srctr
825	2.5.2	Process Step -- information about a single event.
826		Type: compound
827		Short Name: procstep
828	2.5.2.1	Process Description -- an explanation of the event and related parameters or tolerances.
829		Type: text
830		Domain: free text
831		Short Name: procdesc
832	2.5.2.2	Source Used Citation Abbreviation -- the Source Citation Abbreviation of a data set used in the processing step.
833		Type: text
835		Domain: Source Citation Abbreviations from the Source Information entries for the data set.
836		Short Name: srcused
837	2.5.2.3	Process Date -- the date when the event was completed.
838		Type: date
839		Domain: "Unknown" "Not complete" free date
840		Short Name: procdte
841	2.5.2.4	Process Time -- the time when the event was completed.
842		Type: time
843		Domain: free time
844		Short Name: proctme
845	2.5.2.5	Source Produced Citation Abbreviation -- the Source Citation Abbreviation of an intermediate data set that (1) is significant in the opinion of the data producer, (2) is generated in the processing step, and (3) is used in later processing steps.
846		Type: text
847		Domain: Source Citation Abbreviations from the Source Information entries for the data set.
848		Short Name: srcprod
849		
850		
851	2.5.2.6	Process Contact -- the party responsible for the processing step information.
852		Type: compound
853		Short Name: proccont
854	2.6	Cloud Cover -- area of a data set obstructed by clouds, expressed as a percentage of the spatial extent.
855		Type: integer
856		Domain: 0 <= Cloud Cover <= 100 "Unknown"
857		Short Name: cloud



## 858 Spatial Data Organization Information

```

859      3   Spatial Data Organization Information -- the mechanism used to represent spatial information in the data set.
860          Type: compound
861          Short Name: spdoinfo

```

```

862 Spatial_Data_Organization_Information =
863     0{Indirect_Spatial_Reference}1 +
864     0{Direct_Spatial_Reference_Method +
865         ( [Point_and_Vector_Object_Information |
866           Raster_Object_Information] )}1

```

```

867 Point_and_Vector_Object_Information =
868     [1{SDTS_Terms_Description}n |
869     VPF_Terms_Description]

```

```

870         SDTS_Terms_Description =
871             SDTS_Point_and_Vector_Object_Type +
872             (Point_and_Vector_Object_Count)

```

```

873 VPF_Terms_Description =
874     VPF_Topology_Level +
875     1{VPF_Point_and_Vector_Object_Information}n

```

```

876 VPF_Point_and_Vector_Object_Information =
877     VPF_Point_and_Vector_Object_Type +
878     (Point_and_Vector_Object_Count)

```

```

879 Raster_Object_Information =
880     Raster_Object_Type +
881     (Row_Count +
882      Column_Count +
883      0{Vertical_Count}1) )

```

884 3.1 Indirect Spatial Reference -- name of types of geographic features, addressing schemes, or other means through  
885 which locations are referenced in the data set.  
886 Type: text  
887 Domain: free text  
888 Short Name: indspref

```

889 3.2 Direct Spatial Reference Method -- the system of objects used to represent space in the data set.
890     Type: text
891     Domain: "Point" "Vector" "Raster"
892     Short Name: direct

```

```

893      3.3 Point and Vector Object Information -- the types and numbers of vector or nongridded point spatial objects in the
894      data set.
895          Type: compound
896          Short Name: ptvctinf

```

3.3.1 SDTS Terms Description -- point and vector object information using the terminology and concepts from "Spatial Data Concepts," which is Chapter 2 of Part 1 in Department of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal Information Processing Standard 173): Washington, Department of Commerce, National Institute of Standards and Technology. *(Note that this reference to the SDTS is used ONLY to provide a set of terminology for the point and vector objects.)*

902		Type: compound
903		Short Name: sdtsterm
904	3.3.1.1	SDTS Point and Vector Object Type -- name of point and vector spatial objects used to locate zero-,
905		one-, and two-dimensional spatial locations in the data set.
906		Type: text
907		Domain: (The domain is from "Spatial Data Concepts," which is Chapter 2 of Part 1 in Department
908		of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal Information Processing
909		Standard 173): Washington, Department of Commerce, National Institute of Standards and
910		Technology):
911		"Point" "Entity point" "Label point" "Area point" "Node, planar graph" "Node, network" "String"
912		"Link" "Complete chain" "Area chain" "Network chain, planar graph" "Network chain, nonplanar
913		graph" "Circular arc, three point center" "Elliptical arc" "Uniform B-spline" "Piecewise Bezier"
914		"Ring with mixed composition" "Ring composed of strings" "Ring composed of chains"
915		"Ring composed of arcs" "G-polygon" "GT-polygon composed of rings"
916		"GT-polygon composed of chains" "Universe polygon composed of rings"
917		"Universe polygon composed of chains" "Void polygon composed of rings"
918		"Void polygon composed of chains"
919		Short Name: sdtstype
920	3.3.1.2	Point and Vector Object Count -- the total number of the point or vector object type occurring in the
921		data set.
922		Type: integer
923		Domain: Point and Vector Object Count > 0
924		Short Name: ptvctcnt
925	3.3.2	VPF Terms Description -- point and vector object information using the terminology and concepts from
926		Department of Defense, 1992, Vector Product Format (MIL-STD-600006): Philadelphia, Department of
927		Defense, Defense Printing Service Detachment Office. <i>(Note that this reference to the VPF is used ONLY to</i>
928		<i>provide a set of terminology for the point and vector objects.)</i>
929		Type: compound
930		Short Name: vpfterm
931	3.3.2.1	VPF Topology Level -- the completeness of the topology carried by the data set. The levels of
932		completeness are defined in Department of Defense, 1992, Vector Product Format (MIL-STD-600006):
933		Philadelphia, Department of Defense, Defense Printing Service Detachment Office.
934		Type: integer
935		Domain: 0 <= VPF Topology Level <= 3
936		Short Name: vpflvel
937	3.3.2.2	VPF Point and Vector Object Information -- information about VPF point and vector objects
938		Type: compound
939		Short Name: vpfinfo
940		VPF Point and Vector Object Type -- name of point and vector spatial objects used to locate
941		zero-, one-, and two-dimensional spatial locations in the data set.
942		Type: text
943		Domain: (The domain is from Department of Defense, 1992, Vector Product Format
944		(MIL-STD-600006): Philadelphia, Department of Defense, Defense Printing Service
945		Detachment Office):
946		"Node" "Edge" "Face" "Text"
947		Short Name: vpftype
948	3.4	Raster Object Information -- the types and numbers of raster spatial objects in the data set.
949		Type: compound

950		Short Name: rastinfo
951	3.4.1	Raster Object Type -- raster spatial objects used to locate zero-, two-, or three-dimensional locations in the
952		data set.
953		Type: text
954		Domain: (With the exception of "voxel", the domain is from "Spatial Data Concepts," which is chapter 2
955		of part 1 <i>in</i> Department of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal
956		Information Processing Standard 173): Washington, Department of Commerce, National Institute of
957		Standards and Technology):
958		"Point" "Pixel" "Grid Cell" "Voxel"
959		Short Name: rasttype
960	3.4.2	Row Count -- the maximum number of raster objects along the ordinate (y) axis. For use with rectangular
961		raster objects.
962		Type: Integer
963		Domain: Row Count > 0
964		Short Name: rowcount
965	3.4.3	Column Count -- the maximum number of raster objects along the abscissa (x) axis. For use with rectangular
966		raster objects.
967		Type: Integer
968		Domain: Column Count > 0
969		Short Name: colcount
970	3.4.4	Vertical Count -- the maximum number of raster objects along the vertical (z) axis. For use with rectangular
971		volumetric raster objects (voxels).
972		Type: Integer
973		Domain: Depth Count > 0
974		Short Name: vrtcount

## Spatial Reference Information

- 4 Spatial Reference Information -- the description of the reference frame for, and the means to encode, coordinates in the data set.

Type: compound

Short Name: spref

Spatial\_Reference\_Information =

0{Horizontal\_Coordinate\_System\_Definition}1 +

0{Vertical\_Coordinate\_System\_Definition}1

Horizontal\_Coordinate\_System\_Definition =

[Geographic |

1{Planar}n |

Local] +

0{Geodetic\_Model}1

Geographic =

Latitude\_Resolution +

Longitude\_Resolution +

Geographic\_Coordinate\_Units

Planar =

[Map\_Projection |

Grid\_Coordinate\_System |

Local\_Planar] +

Planar\_Coordinate\_Information

Map\_Projection =

Map\_Projection\_Name +

[Albers\_Conical\_Equal\_Area |

Azimuthal\_Equidistant |

Equidistant\_Conic |

Equirectangular |

General\_Vertical\_Near-sided\_Perspective |

Gnomonic |

Lambert\_Azimuthal\_Equal\_Area |

Lambert\_Conformal\_Conic |

Mercator |

Modified\_Stereographic\_for\_Alaska |

Miller\_Cylindrical |

Oblique\_Mercator |

Orthographic |

Polar\_Stereographic |

Polyconic |

Robinson |

Sinusoidal |

Space\_Oblique\_Mercator\_(Landsat) |

Stereographic |

Transverse\_Mercator |

van\_der\_Grinten |

Map\_Projection\_Parameters]

Albers\_Conical\_Equal\_Area =

1{Standard\_Parallel}2 +

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1023	Longitude_of_Central_Meridian +
1024	Latitude_of_Projection-Origin +
1025	False_Easting +
1026	False_Northing
1027	Azimuthal_Equidistant =
1028	Longitude_of_Central_Meridian +
1029	Latitude_of_Projection-Origin +
1030	False_Easting +
1031	False_Northing
1032	Equidistant_Conic =
1033	1{Standard_Parallel}2 +
1034	Longitude_of_Central_Meridian +
1035	Latitude_of_Projection-Origin +
1036	False_Easting +
1037	False_Northing
1038	Equirectangular =
1039	Standard_Parallel +
1040	Longitude_of_Central_Meridian +
1041	False_Easting +
1042	False_Northing
1043	General_Vertical_Near-sided_Perspective =
1044	Height_of_Perspective_Point_Above_Surface +
1045	Longitude_of_Projection_Center +
1046	Latitude_of_Projection_Center +
1047	False_Easting +
1048	False_Northing
1049	Gnomonic =
1050	Longitude_of_Projection_Center +
1051	Latitude_of_Projection_Center +
1052	False_Easting +
1053	False_Northing
1054	
1055	Lambert_Azimuthal_Equal_Area =
1056	Longitude_of_Projection_Center +
1057	Latitude_of_Projection_Center +
1058	False_Easting +
1059	False_Northing
1060	Lambert_Conformal_Conic =
1061	1{Standard_Parallel}2 +
1062	Longitude_of_Central_Meridian +
1063	Latitude_of_Projection-Origin +
1064	False_Easting +
1065	False_Northing
1066	Mercator =
1067	[Standard_Parallel
1068	Scale_Factor_at_Equator] +
1069	Longitude_of_Central_Meridian +
1070	False_Easting +

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1071	False_Northing
1072	Modified_Stereographic_for_Alaska =
1073	False_Easting +
1074	False_Northing
1075	Miller_Cylindrical =
1076	Longitude_of_Central_Meridian +
1077	False_Easting +
1078	False_Northing
1079	Oblique_Mercator =
1080	Scale_Factor_at_Center_Line +
1081	[Oblique_Line_Azimuth
1082	Oblique_Line_Point] +
1083	Latitude_of_Projection-Origin +
1084	False_Easting +
1085	False_Northing
1086	Oblique_Line_Azimuth =
1087	Azimuthal_Angle +
1088	Azimuth_Measure_Point_Longitude
1089	Oblique_Line_Point =
1090	2{Oblique_Line_Latitude +
1091	Oblique_Line_Longitude}2
1092	Orthographic =
1093	Longitude_of_Projection_Center +
1094	Latitude_of_Projection_Center +
1095	False_Easting +
1096	False_Northing
1097	Polar_Stereographic =
1098	Straight-Vertical_Longitude_from_Pole +
1099	[Standard_Parallel
1100	Scale_Factor_at_Projection-Origin] +
1101	False_Easting +
1102	False_Northing
1103	Polyconic =
1104	Longitude_of_Central_Meridian +
1105	Latitude_of_Projection-Origin +
1106	False_Easting +
1107	False_Northing
1108	Robinson =
1109	Longitude_of_Projection_Center +
1110	False_Easting +
1111	False_Northing
1112	Sinusoidal =
1113	Longitude_of_Central_Meridian +
1114	False_Easting +
1115	False_Northing

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1116                   Space\_Oblique\_Mercator\_(Landsat) =  
1117                         Landsat\_Number +  
1118                         Path\_Number +  
1119                         False\_Easting +  
1120                         False\_Northing

1121                   Stereographic =  
1122                         Longitude\_of\_Projection\_Center +  
1123                         Latitude\_of\_Projection\_Center +  
1124                         False\_Easting +  
1125                         False\_Northing

1126                   Transverse\_Mercator =  
1127                         Scale\_Factor\_at\_Central\_Meridian +  
1128                         Longitude\_of\_Central\_Meridian +  
1129                         Latitude\_of\_Projection-Origin +  
1130                         False\_Easting +  
1131                         False\_Northing

1132                   van\_der\_Grinten =  
1133                         Longitude\_of\_Central\_Meridian +  
1134                         False\_Easting +  
1135                         False\_Northing

1136                   Grid\_Coordinate\_System =  
1137                         Grid\_Coordinate\_System\_Name +  
1138                         [Universal\_Transverse\_Mercator |  
1139                             Universal\_Polar\_Stereographic |  
1140                             State\_Plane\_Coordinate\_System |  
1141                             ARC\_Coordinate\_System |  
1142                             Other\_Grid\_System's\_Definition]

1143                   Universal\_Transverse\_Mercator =  
1144                         UTM\_Zone\_Number +  
1145                         Transverse\_Mercator

1146                   Universal\_Polar\_Stereographic =  
1147                         UPS\_Zone\_Identifier +  
1148                         Polar\_Stereographic

1149                   State\_Plane\_Coordinate\_System =  
1150                         SPCS\_Zone\_Identifier +  
1151                         [Lambert\_Conformal\_Conic |  
1152                             Transverse\_Mercator |  
1153                             Oblique\_Mercator |  
1154                             Polyconic]

1155                   ARC\_Coordinate\_System =  
1156                         ARC\_System\_Zone\_Identifier +  
1157                         [Equirectangular |  
1158                             Azimuthal\_Equidistant]

1159                   Local\_Planar =  
1160                         Local\_Planar\_Description +  
1161                         Local\_Planar\_Georeference\_Information

1162                   Planar\_Coordinate\_Information =  
1163                             Planar\_Coordinate\_Encoding\_Method +  
1164                             [Coordinate\_Representation |  
1165                                 Distance\_and\_Bearing\_Representation] +  
1166                             Planar\_Distance\_Units

1167                   Coordinate\_Representation =  
1168                             Abscissa\_Resolution +  
1169                             Ordinate\_Resolution

1170                   Distance\_and\_Bearing\_Representation =  
1171                             Distance\_Resolution +  
1172                             Bearing\_Resolution +  
1173                             Bearing\_Units +  
1174                             Bearing\_Reference\_Direction +  
1175                             Bearing\_Reference\_Meridian

1176                   Local =  
1177                             Local\_Description +  
1178                             Local\_Georeference\_Information

1179                   Geodetic\_Model =  
1180                             0{Horizontal\_Datum\_Name}1 +  
1181                             Ellipsoid\_Name +  
1182                             Semi-major\_Axis +  
1183                             Denominator\_of\_Flattening\_Ratio

1184                   Vertical\_Coordinate\_System\_Definition =  
1185                             0{Altitude\_System\_Definition}1 +  
1186                             0{Depth\_System\_Definition}1

1187                   Altitude\_System\_Definition =  
1188                             Altitude\_Datum\_Name +  
1189                             1{Altitude\_Resolution}n +  
1190                             Altitude\_Distance\_Units +  
1191                             Altitude\_Encoding\_Method

1192                   Depth\_System\_Definition =  
1193                             Depth\_Datum\_Name +  
1194                             1{Depth\_Resolution}n +  
1195                             Depth\_Distance\_Units +  
1196                             Depth\_Encoding\_Method

1197                   4.1 Horizontal Coordinate System Definition -- the reference frame or system from which linear or angular quantities  
1198                             are measured and assigned to the position that a point occupies.

1199                             Type: compound  
1200                             Short Name: horizsys

1201                   4.1.1 Geographic -- the quantities of latitude and longitude which define the position of a point on the Earth's  
1202                             surface with respect to a reference spheroid.

1203                             Type: compound  
1204                             Short Name: geograph

1205                   4.1.1.1 Latitude Resolution -- the minimum difference between two adjacent latitude values expressed in  
1206                             Geographic Coordinate Units of measure.



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1207		Type: real
1208		Domain: Latitude Resolution > 0.0
1209		Short Name: latres
1210	4.1.1.2	Longitude Resolution -- the minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.
1211		Type: real
1212		Domain: Longitude Resolution > 0.0
1213		Short Name: longres
1214		
1215	4.1.1.3	Geographic Coordinate Units -- units of measure used for the latitude and longitude values.
1216		Type: text
1217		Domain: "Decimal degrees" "Decimal minutes" "Decimal seconds" "Degrees and decimal minutes"
1218		"Degrees, minutes, and decimal seconds" "Radians" "Grads"
1219		Short Name: geogunit
1220	4.1.2	Planar -- the quantities of distances, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.
1221		Type: compound
1222		Short Name: planar
1223		
1224	4.1.2.1	Map Projection -- the systematic representation of all or part of the surface of the Earth on a plane or developable surface.
1225		Type: compound
1226		Short Name: mapproj
1227		
1228	4.1.2.1.1	Map Projection Name -- name of the map projection.
1229		Type: text
1230		Domain: "Albers Conical Equal Area" "Azimuthal Equidistant" "Equidistant Conic"
1231		"Equirectangular" "General Vertical Near-sided Projection" "Gnomonic" "Lambert Azimuthal
1232		Equal Area" "Lambert Conformal Conic" "Mercator" "Modified Stereographic for Alaska"
1233		"Miller Cylindrical" "Oblique Mercator" "Orthographic" "Polar Stereographic" "Polyconic"
1234		"Robinson" "Sinusoidal" "Space Oblique Mercator" "Stereographic" "Transverse Mercator"
1235		"van der Grinten" "other projection"
1236		Short Name: mapprojn
1237	4.1.2.1.2	Albers Conical Equal Area -- contains parameters for the Albers Conical Equal Area projection.
1238		Type: compound
1239		Short Name: albers
1240	4.1.2.1.3	Azimuthal Equidistant -- contains parameters for the Azimuthal Equidistant projection.
1241		Type: compound
1242		Short Name:azimequi
1243		
1244	4.1.2.1.4	Equidistant Conic -- contains parameters for the Equidistant Conic projection.
1245		Type: compound
1246		Short Name: equicon
1247		
1248	4.1.2.1.5	Equirectangular -- contains parameters for the Equirectangular projection.
1249		Type: compound
1250		Short Name: equirect
1251	4.1.2.1.6	General Vertical Near-sided Perspective -- contains parameters for the General Vertical Near-sided Perspective projection.
1252		Type: compound
1253		

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1254		Short Name: gvnsnp
1255	4.1.2.1.7	Gnomonic -- contains parameters for the Gnomonic projection.
1256		Type: compound
1257		Short Name: gnomonic
1258	4.1.2.1.8	Lambert Azimuthal Equal Area -- contains parameters for the Lambert Azimuthal Equal Area projection.
1259		
1260		Type: compound
1261		Short Name: lamberta
1262	4.1.2.1.9	Lambert Conformal Conic -- contains parameters for the Lambert Conformal Conic projection.
1263		Type: compound
1264		Short Name: lambertc
1265	4.1.2.1.10	Mercator -- contains parameters for the Mercator projection
1266		Type: compound
1267		Short Name: mercator
1268	4.1.2.1.11	Modified Stereographic for Alaska -- contains parameters for the Modified Stereographic for Alaska projection.
1269		
1270		Type: compound
1271		Short Name: modsak
1272	4.1.2.1.12	Miller Cylindrical -- contains parameters for the Miller Cylindrical projection.
1273		Type: compound
1274		Short Name: miller
1275	4.1.2.1.13	Oblique Mercator -- contains parameters for the Oblique Mercator projection.
1276		Type: compound
1277		Short Name: obqmerc
1278	4.1.2.1.14	Orthographic -- contains parameters for the Orthographic projection.
1279		Type: compound
1280		Short Name: orthogr
1281	4.1.2.1.15	Polar Stereographic -- contains parameters for the Polar Stereographic projection.
1282		Type: compound
1283		Short Name: polarst
1284	4.1.2.1.16	Polyconic -- contains parameters for the Polyconic projection.
1285		Type: compound
1286		Short Name: polycon
1287	4.1.2.1.17	Robinson -- contains parameters for the Robinson projection.
1288		Type: compound
1289		Short Name: robinson
1290	4.1.2.1.18	Sinusoidal -- contains parameters for the Sinusoidal projection.
1291		Type: compound
1292		Short Name: sinusoid
1293	4.1.2.1.19	Space Oblique Mercator (Landsat) -- contains parameters for the Space Oblique Mercator (Landsat) projection.
1294		
1295		Type: compound

1296		Short Name: spaceobq
1297	4.1.2.1.20	Stereographic -- contains parameters for the Stereographic projection.
1298		Type: compound
1299		Short Name: stereo
1300	4.1.2.1.21	Transverse Mercator -- contains parameters for the Transverse mercator projection.
1301		Type: compound
1302		Short Name: transmer
1303	4.1.2.1.22	van der Grinten -- contains parameters for the van der Grinten projection.
1304		Type: compound
1305		Short Name: vdgrin
1306	4.1.2.1.23	Map Projection Parameters -- a complete description of a projection that was used for the data set. The information provided shall include the names of the parameters and values used for the data set, and the citation of the specification for the algorithms that describe the mathematical relationship between the Earth and the plane or developable surface for the projection.
1307		
1308		
1309		
1310		Type: compound
1311	4.1.2.1.23.1	Standard Parallel -- line of constant latitude at which the surface of the Earth and the plane or developable surface intersect.
1312		
1313		Type: real
1314		Domain: -90.0 <= Standard Parallel <= 90.0
1315		Short Name: stdparll
1316	4.1.2.1.23.2	Longitude of Central Meridian -- the line of longitude at the center of a map projection generally used as the basis for constructing the projection.
1317		
1318		Type: real
1319		Domain: -180.0 <= Longitude of Central Meridian < 180.0
1320		Short Name: longcm
1321	4.1.2.1.23.3	Latitude of Projection Origin -- latitude chosen as the origin of rectangular coordinates for a map projection.
1322		
1323		Type: real
1324		Domain: -90.0 <= Latitude of Projection Origin <= 90.0
1325		Short Name: latprjo
1326	4.1.2.1.23.4	False Easting -- the value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
1327		
1328		
1329		Type: real
1330		Domain: free real
1331		Short Name: feast
1332	4.1.2.1.23.5	False Northing -- the value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
1333		
1334		
1335		Type: real
1336		Domain: free real
1337		Short Name: fnorth
1338	4.1.2.1.23.6	Scale Factor at Equator -- a multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the equator.
1339		
1340		Type: real

1341		Domain: Scale Factor at Equator > 0.0
1342		Short Name: sfequat
1343	4.1.2.1.23.7	Height of Perspective Point Above Surface -- height of viewpoint above the Earth,
1344		expressed in meters.
1345		Type: real
1346		Domain: Height of Perspective Point Above Surface > 0.0
1347		Short Name: heightpt
1348	4.1.2.1.23.8	Longitude of Projection Center -- longitude of the point of projection for azimuthal
1349		projections.
1350		Type: real
1351		Domain: -180.0 <= Longitude of Projection Center < 180.0
1352		Short Name: longpc
1353	4.1.2.1.23.9	Latitude of Projection Center -- latitude of the point of projection for azimuthal projections.
1354		Type: real
1355		Domain: -90.0 <= Latitude of Projection Center <= 90.0
1356		Short Name: latprjc
1357	4.1.2.1.23.10	Scale Factor at Center Line -- a multiplier for reducing a distance obtained from a map by
1358		computation or scaling to the actual distance along the center line.
1359		Type: real
1360		Domain: Scale Factor at Center Line > 0.0
1361		Short Name: sfctrln
1362	4.1.2.1.23.11	Oblique Line Azimuth -- method used to describe the line along which an oblique mercator
1363		map projection is centered using the map projection origin and an azimuth.
1364		Type: compound
1365		Short Name: obqlazim
1366	4.1.2.1.23.11.1	Azimuthal Angle -- angle measured clockwise from north, and expressed in degrees.
1367		Type: real
1368		Domain: 0.0 <= Azimuthal Angle < 360.0
1369		Short Name: azimuthl
1370	4.1.2.1.23.11.2	Azimuth Measure Point Longitude -- longitude of the map projection origin.
1371		Type: real
1372		Domain: -180.0 <= Azimuth Measure Point Longitude < 180.0
1373		Short Name: azimptl
1374	4.1.2.1.23.12	Oblique Line Point -- method used to describe the line along which an oblique mercator
1375		map projection is centered using two points near the limits of the mapped region that
1376		define the center line.
1377		Type: compound
1378		Short Name: obqlpt
1379	4.1.2.1.23.12.1	Oblique Line Latitude -- latitude of a point defining the oblique line.
1380		Type: real
1381		Domain: -90.0 <= Oblique Line Latitude <= 90.0
1382		Short Name: obqllat
1383	4.1.2.1.23.12.2	Oblique Line Longitude -- longitude of a point defining the oblique line.
1384		Type: real
1385		Domain: -180.0 <= Oblique Line Longitude < 180.0

1386		Short Name: obqllong
1387	4.1.2.1.23.13	Straight Vertical Longitude from Pole -- longitude to be oriented straight up from the
1388		North or South Pole.
1389		Type: real
1390		Domain: -180.0 <= Straight Vertical Longitude from Pole < 180.0
1391		Short Name: svlong
1392	4.1.2.1.23.14	Scale Factor at Projection Origin -- a multiplier for reducing a distance obtained from a
1393		map by computation or scaling to the actual distance at the projection origin.
1394		Type: real
1395		Domain: Scale Factor at Projection Origin > 0.0
1396		Short Name: sfprjorg
1397	4.1.2.1.23.15	Landsat Number -- number of the Landsat satellite. <i>(Note: This data element exists solely</i>
1398		<i>to provide a parameter needed to define the space oblique mercator projection. It is not</i>
1399		<i>used to identify data originating from a remote sensing vehicle.)</i>
1400		Type: Integer
1401		Domain: free integer
1402		Short Name: landsat
1403	4.1.2.1.23.16	Path Number -- number of the orbit of the Landsat satellite. <i>(Note: This data element</i>
1404		<i>exists solely to provide a parameter needed to define the space oblique mercator</i>
1405		<i>projection. It is not used to identify data originating from a remote sensing vehicle.)</i>
1406		Type: integer
1407		Domain: 0 < Path Number < 251 for Landsats 1, 2, or 3
1408		0 < Path Number < 233 for Landsats 4 or 5, free integer
1409		Short Name: pathnum
1410	4.1.2.1.23.17	Scale Factor at Central Meridian -- a multiplier for reducing a distance obtained from a
1411		map by computation or scaling to the actual distance along the central meridian.
1412		Type: real
1413		Domain: Scale Factor at Central Meridian > 0.0
1414		Short Name: sfctrmer
1415	4.1.2.1.23.18	Other Projection's Definition -- a complete description of a projection, not defined
1416		elsewhere in the standard, that was used for the data set. The information provided shall
1417		include the name of the projection, names of parameters and values used for the data set,
1418		and the citation of the specification for the algorithms that describe the mathematical
1419		relationship between Earth and plane or developable surface for the projection.
1420		Type: text
1421		Domain: free text
1422	4.1.2.2	Grid Coordinate System -- a plane-rectangular coordinate system usually based on, and mathematically
1423		adjusted to, a map projection so that geographic positions can be readily transformed to and from plane
1424		coordinates.
1425		Type: compound
1426		Short Name: gridsys
1427	4.1.2.2.1	Grid Coordinate System Name -- name of the grid coordinate system.
1428		Type: text
1429		Domain: "Universal Transverse Mercator" "Universal Polar Stereographic"
1430		"State Plane Coordinate System 1927" "State Plane Coordinate System 1983"
1431		"ARC Coordinate System" "other grid system"
1432		Short Name: gridsysn

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1433	4.1.2.2.2	Universal Transverse Mercator (UTM) -- a grid system based on the transverse mercator projection, applied between latitudes 84 degrees north and 80 degrees south on the Earth's surface.
1434		Type: compound
1435		Short Name: utm
1436		
1437	4.1.2.2.2.1	UTM Zone Number -- identifier for the UTM zone.
1438		Type: integer
1439		Domain: 1 <= UTM Zone Number <= 60 for the northern hemisphere;
1440		-60 <= UTM Zone Number <= -1 for the southern hemisphere
1441		Short Name: utmzone
1442	4.1.2.2.3	Universal Polar Stereographic (UPS) -- a grid system based on the polar stereographic projection, applied to the Earth's polar regions north of 84 degrees north and south of 80 degrees south.
1443		Type: compound
1444		Short Name: ups
1445		
1446	4.1.2.2.3.1	UPS Zone Identifier -- identifier for the UPS zone.
1447		Type: text
1448		Domain: "A" "B" "Y" "Z"
1449		Short Name: upszone
1450	4.1.2.2.4	State Plane Coordinate System (SPCS) -- a plane-rectangular coordinate system established for each state in the United States by the National Geodetic Survey.
1451		Type: compound
1452		Short Name: spcs
1453		
1454	4.1.2.2.4.1	SPCS Zone Identifier -- identifier for the SPCS zone.
1455		Type: text
1456		Domain: Four-digit numeric codes for the State Plane Coordinate Systems based on the North American Datum of 1927 are found in Department of Commerce, 1986, Representation of geographic point locations for information interchange (Federal Information Processing Standard 70-1): Washington: Department of Commerce, National Institute of Standards and Technology. Codes for the State Plane Coordinate Systems based on the North American Datum of 1983 are found in Department of Commerce, 1989 (January), State Plane Coordinate System of 1983 (National Oceanic and Atmospheric Administration Manual NOS NGS 5): Silver Spring, Maryland, National Oceanic and Atmospheric Administration, National Ocean Service, Coast and Geodetic Survey.
1457		Short Name: spcszone
1458		
1459		
1460		
1461		
1462		
1463		
1464		
1465		
1466	4.1.2.2.5	ARC Coordinate System -- the Equal Arc-second Coordinate System, a plane-rectangular coordinate system established in Department of Defense, 1990, Military specification ARC Digitized Raster Graphics (ADRG) (MIL-A-89007): Philadelphia, Department of Defense, Defense Printing Service Detachment Office.
1467		Type: compound
1468		Short Name: arcsys
1469		
1470		
1471		
1472	4.1.2.2.5.1	ARC System Zone Identifier -- identifier for the ARC Coordinate System Zone.
1473		Type: integer
1474		Domain: 1 <= ARC System Zone Identifier <= 18
1475		Short Name: arczone
1476	4.1.2.2.6	Other Grid System's Definition -- a complete description of a grid system, not defined elsewhere in this standard, that was used for the data set. The information provided shall include the name of the grid system, the names of the parameters and values used for the data set, and the citation of the specification for the algorithms that describe the mathematical relationship between the Earth and
1477		
1478		
1479		

1480		the coordinates of the grid system.
1481		Type: text
1482		Domain: free text
1483		Short Name: othergrd
1484	4.1.2.3	Local Planar -- any right-handed planar coordinate system of which the z-axis coincides with a plumb
1485		line through the origin that locally is aligned with the surface of the Earth.
1486		Type: compound
1487		Short Name: localp
1488	4.1.2.3.1	Local Planar Description -- a description of the local planar system.
1489		Type: text
1490		Domain: free text
1491		Short Name: localpd
1492	4.1.2.3.2	Local Planar Georeference Information -- a description of the information provided to register the
1493		local planar system to the Earth (e.g. control points, satellite ephemeral data, inertial navigation
1494		data).
1495		Type: text
1496		Domain: free text
1497		Short Name: localpgi
1498	4.1.2.4	Planar Coordinate Information -- information about the coordinate system developed on the planar
1499		surface.
1500		Type: compound
1501		Short Name: planci
1502	4.1.2.4.1	Planar Coordinate Encoding Method -- the means used to represent horizontal positions.
1503		Type: text
1504		Domain: "coordinate pair" "distance and bearing" "row and column"
1505		Short Name: plance
1506	4.1.2.4.2	Coordinate Representation -- the method of encoding the position of a point by measuring its
1507		distance from perpendicular reference axes (the "coordinate pair" and "row and column"
1508		methods).
1509		Type: compound
1510		Short Name: coordrep
1511	4.1.2.4.2.1	Abscissa Resolution -- the (nominal) minimum distance between the "x" or column values
1512		of two adjacent points, expressed in Planar Distance Units of measure.
1513		Type: real
1514		Domain: Abscissa Resolution > 0.0
1515		Short Name: absres
1516	4.1.2.4.2.2	Ordinate Resolution -- the (nominal) minimum distance between the "y" or row values of
1517		two adjacent points, expressed in Planar Distance Units of measure.
1518		Type: real
1519		Domain: Ordinate Resolution > 0.0
1520		Short Name: ordres
1521	4.1.2.4.3	Distance and Bearing Representation -- a method of encoding the position of a point by
1522		measuring its distance and direction (azimuth angle) from another point.
1523		Type: compound
1524		Short Name: distbrep

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1525	4.1.2.4.3.1	Distance Resolution -- the minimum distance measurable between two points, expressed
1526		Planar Distance Units of measure.
1527		Type: real
1528		Domain: Distance Resolution > 0.0
1529		Short Name: distres
1530	4.1.2.4.3.2	Bearing Resolution -- the minimum angle measurable between two points, expressed in
1531		Bearing Units of measure.
1532		Type: real
1533		Domain: Bearing Resolution > 0.0
1534		Short Name: bearres
1535	4.1.2.4.3.3	Bearing Units -- units of measure used for angles.
1536		Type: text
1537		Domain: "Decimal degrees" "Decimal minutes" "Decimal seconds" "Degrees and
1538		decimal minutes" "Degrees, minutes, and decimal seconds" "Radians" "Grads"
1539		Short Name: bearunit
1540	4.1.2.4.3.4	Bearing Reference Direction -- direction from which the bearing is measured.
1541		Type: text
1542		Domain: "North" "South"
1543		Short Name: bearrefd
1544	4.1.2.4.3.5	Bearing Reference Meridian -- axis from which the bearing is measured.
1545		Type: text
1546		Domain: "Assumed" "Grid" "Magnetic" "Astronomic" "Geodetic"
1547		Short Name: bearrefm
1548	4.1.2.4.4	Planar Distance Units -- units of measure used for distances.
1549		Type: text
1550		Domain: "meters" "international feet" "survey feet" free text
1551		Short Name: plandu
1552	4.1.3	Local -- a description of any coordinate system that is not aligned with the surface of the Earth.
1553		Type: compound
1554		Short Name: local
1555	4.1.3.1	Local Description -- a description of the coordinate system and its orientation to the surface of the Earth.
1556		Type: text
1557		Domain: free text
1558		Short Name: localdes
1559	4.1.3.2	Local Georeference Information -- a description of the information provided to register the local system
1560		to the Earth (e.g. control points, satellite ephemeral data, inertial navigation data).
1561		Type: text
1562		Domain: free text
1563		Short Name: localgeo
1564	4.1.4	Geodetic Model -- parameters for the shape of the earth.
1565		Type: compound
1566		Short Name: geodetic
1567	4.1.4.1	Horizontal Datum Name -- the identification given to the reference system used for defining the
1568		coordinates of points.
1569		Type: text



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1570		Domain: "North American Datum of 1927" "North American Datum of 1983" free text
1571		Short Name: horizdn
1572	4.1.4.2	Ellipsoid Name -- identification given to established representations of the Earth's shape.
1573		Type: text
1574		Domain: "Clarke 1866" "Geodetic Reference System 80" free text
1575		Short Name: ellips
1576	4.1.4.3	Semi-major Axis -- radius of the equatorial axis of the ellipsoid.
1577		Type: real
1578		Domain: Semi-major Axis > 0.0
1579		Short Name: semiaxis
1580	4.1.4.4	Denominator of Flattening Ratio -- the denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid when the numerator is set to 1.
1581		
1582		Type: real
1583		Domain: Denominator of Flattening > 0.0
1584		Short Name: denflat
1585	4.2	Vertical Coordinate System Definition -- the reference frame or system from which vertical distances (altitudes or depths) are measured.
1586		
1587		Type: compound
1588		Short Name: vertdef
1589	4.2.1	Altitude System Definition -- the reference frame or system from which altitudes (elevations) are measured.
1590		The term "altitude" is used instead of the common term "elevation" to conform to the terminology in Federal
1591		Information Processing Standards 70-1 and 173.
1592		Type: compound
1593		Short Name: altsys
1594	4.2.1.1	Altitude Datum Name -- the identification given to the level surface taken as the surface of reference from which altitudes are measured.
1595		
1596		Type: text
1597		Domain: "National Geodetic Vertical Datum of 1929" "North American Vertical Datum of 1988"
1598		free text
1599		Short Name: altdatum
1600	4.2.1.2	Altitude Resolution -- the minimum distance possible between two adjacent altitude values, expressed in Altitude Distance Units of measure.
1601		
1602		Type: real
1603		Domain: Altitude Resolution > 0.0
1604		Short Name: altres
1605	4.2.1.3	Altitude Distance Units -- units in which altitudes are recorded.
1606		Type: text
1607		Domain: "meters" "feet" free text
1608		Short Name: altunits
1609	4.2.1.4	Altitude Encoding Method -- the means used to encode the altitudes.
1610		Type: text
1611		Domain: "Explicit elevation coordinate included with horizontal coordinates" "Implicit coordinate"
1612		"Attribute values"
1613		Short Name: altenc
1614	4.2.2	Depth System Definition -- the reference frame or system from which depths are measured.

1615		Type: compound
1616		Short Name: depthsys
1617	4.2.2.1	Depth Datum Name -- the identification given to surface of reference from which depths are measured.
1618		Type: text
1619		Domain: "Local surface" "Chart datum; datum for sounding reduction" "Lowest astronomical tide"
1620		"Highest astronomical tide" "Mean low water" "Mean high water" "Mean sea level" "Land survey
1621		datum" "Mean low water springs" "Mean high water springs" "Mean low water neap"
1622		"Mean high water neap" "Mean lower low water" "Mean lower low water springs" "Mean higher
1623		high water" "Mean higher low water" "Mean lower high water" "Spring tide" "Tropic lower low
1624		water" "Neap tide" "High water" "Higher high water" "Low water" "Low-water datum"
1625		"Lowest low water" "Lower low water" "Lowest normal low water" "Mean tide level" "Indian spring
1626		low water" "High-water full and charge" "Low-water full and charge" "Columbia River datum"
1627		"Gulf Coast low water datum" "Equatorial springs low water" "Approximate lowest astronomical
1628		tide" "No correction" free text
1629		Short Name: depthdn
1630	4.2.2.2	Depth Resolution -- the minimum distance possible between two adjacent depth values, expressed in
1631		Depth Distance Units of measure.
1632		Type: real
1633		Domain: Depth Resolution > 0.0
1634		Short Name: depthres
1635	4.2.2.3	Depth Distance Units -- units in which depths are recorded.
1636		Type: text
1637		Domain: "meters" "feet" free text
1638		Short Name: depthdu
1639	4.2.2.4	Depth Encoding Method -- the means used to encode depths.
1640		Type: text
1641		Domain: "Explicit depth coordinate included with horizontal coordinates" "Implicit coordinate"
1642		"Attribute values"
1643		Short Name: depthem

1644 Entity and Attribute Information

1645 5 Entity and Attribute Information -- information about the information content of the data set, including the  
1646 entities types, their attributes, and the domains from which attribute values may be assigned.  
1647 Type: compound  
1648 Short Name: eainfo

1649 Entity\_and\_Attribute\_Information =  
1650 [1{Detailed\_Description}n |  
1651 1{Overview\_Description}n |  
1652 1{Detailed\_Description}n +  
1653 1{Overview\_Description}n]

1654 Detailed\_Description =  
1655 Entity\_Type +  
1656 0{Attribute}n

1657 Entity\_Type =  
1658 Entity\_Type\_Label +  
1659 Entity\_Type\_Definition +  
1660 Entity\_Type\_Definition\_Source

1661 Attribute =  
1662 Attribute\_Label +  
1663 Attribute\_Definition +  
1664 Attribute\_Definition\_Source +  
1665 1{Attribute\_Domain\_Values}n +  
1666 0{Beginning\_Date\_of\_Attribute\_Values +  
1667 0{Ending\_Date\_of\_Attribute\_Values}1}n +  
1668 (Attribute\_Value\_Accuracy\_Information) +  
1669 (Attribute\_Measurement\_Frequency)

1670 Attribute\_Domain\_Values =  
1671 [Enumerated\_Domain |  
1672 Range\_Domain |  
1673 Codeset\_Domain |  
1674 Unrepresentable\_Domain]

1675 Enumerated\_Domain =  
1676 1{Enumerated\_Domain\_Value +  
1677 Enumerated\_Domain\_Value\_Definition +  
1678 Enumerated\_Domain\_Value\_Definition\_Source +  
1679 0{Attribute}n }n

1680 Range\_Domain =  
1681 Range\_Domain\_Minimum +  
1682 Range\_Domain\_Maximum +  
1683 0{Attribute\_Units\_of\_Measure}1 +  
1684 (Attribute\_Measurement\_Resolution) +  
1685 0{Attribute}n

1686 Codeset\_Domain=  
1687 Codeset\_Name +  
1688 Codeset\_Source

1689		Attribute_Value_Accuracy_Information =
1690		Attribute_Value_Accuracy +
1691		Attribute_Value_Accuracy_Explanation
1692		Overview_Description =
1693		Entity_and_Attribute_Overview +
1694		1{Entity_and_Attribute_Detail_Citation}n
1695	5.1	Detailed Description -- description of the entities, attributes, attribute values, and related characteristics encoded
1696		in the data set.
1697		Type: compound
1698		Short Name: detailed
1699	5.1.1	Entity Type -- the definition and description of a set into which similar entity instances are classified.
1700		Type: compound
1701		Short Name: enttype
1702	5.1.1.1	Entity Type Label -- the name of the entity type.
1703		Type: text
1704		Domain: free text
1705		Short Name: enttyp1
1706		
1707	5.1.1.2	Entity Type Definition -- the description of the entity type.
1708		Type: text
1709		Domain: free text
1710		Short Name: enttypd
1711		
1712	5.1.1.3	Entity Type Definition Source -- the authority of the definition.
1713		Type: text
1714		Domain: free text
1715		Short Name: enttypds
1716	5.1.2	Attribute -- a defined characteristic of an entity.
1717		Type: compound
1718		Short Name: attr
1719	5.1.2.1	Attribute Label -- the name of the attribute.
1720		Type: text
1721		Domain: free text
1722		Short Name: attrlabl
1723		
1724	5.1.2.2	Attribute Definition -- the description of the attribute.
1725		Type: text
1726		Domain: free text
1727		Short Name: attrdef
1728		
1729	5.1.2.3	Attribute Definition Source -- the authority of the definition.
1730		Type: text
1731		Domain: free text
1732		Short Name: attrdefs
1733	5.1.2.4	Attribute Domain Values -- the valid values that can be assigned for an attribute.
1734		Type: compound
1735		Short Name: attrdomv
1736	5.1.2.4.1	Enumerated Domain -- the members of an established set of valid values.

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1737		Type: compound
1738		Short Name: edom
1739	5.1.2.4.1.1	Enumerated Domain Value -- the name or label of a member of the set.
1740		Type: text
1741		Domain: free text
1742		Short Name: edomv
1743	5.1.2.4.1.2	Enumerated Domain Value Definition -- the description of the value.
1744		Type: text
1745		Domain: free text
1746		Short Name: edomvd
1747	5.1.2.4.1.3	Enumerated Domain Value Definition Source -- the authority of the definition.
1748		Type: text
1749		Domain: free text
1750		Short Name: edomvds
1751	5.1.2.4.2	Range Domain -- the minimum and maximum values of a continuum of valid values.
1752		Type: compound
1753		Short Name: rdom
1754	5.1.2.4.2.1	Range Domain Minimum -- the least value that the attribute can be assigned.
1755		Type: text
1756		Domain: free text
1757		Short Name: rdommin
1758	5.1.2.4.2.2	Range Domain Maximum -- the greatest value that the attribute can be assigned.
1759		Type: text
1760		Domain: free text
1761		Short Name: rdommax
1762	5.1.2.4.3	Codeset Domain -- reference to a standard or list which contains the members of an established set of valid values.
1763		Type: compound
1764		Short Name: codesetd
1765		
1766	5.1.2.4.3.1.	Codeset Name -- the title of the codeset.
1767		Type: text
1768		Domain: free text
1769		Short Name: codesetn
1770	5.1.2.4.3.2	Codeset Source -- the authority for the codeset.
1771		Type: text
1772		Domain: free text
1773		Short Name: codesets
1774	5.1.2.4.4	Unrepresentable Domain -- description of the values and reasons why they cannot be represented.
1775		Type: text
1776		Domain: free text
1777		Short Name: udom
1778	5.1.2.5	Attribute Units of Measure -- the standard of measurement for an attribute value.
1779		Type: text
1780		Domain: free text

1781		Short Name: attrunit
1782	5.1.2.6	Attribute Measurement Resolution -- the smallest unit increment to which an attribute value is measured.
1783		Type: real
1784		Domain: Attribute Measurement Resolution > 0.0
1785		Short Name: attrmres
1786	5.1.2.7	Beginning Date of Attribute Values -- earliest or only date for which the attribute values are current. In
1787		cases when a range of dates are provided, this is the earliest date for which the information is valid.
1788		Type: ate
1789		Domain: free date
1790		Short Name: begdatea
1791	5.1.2.8	Ending Date of Attribute Values -- latest date for which the information is current. Used in cases when a
1792		range of dates are provided.
1793		Type: date
1794		Domain: free date
1795		Short Name: enddatea
1796	5.1.2.9	Attribute Value Accuracy Information -- an assessment of the accuracy of the assignment of attribute
1797		values.
1798		Type: compound
1799		Short Name: attrvai
1800	5.1.2.9.1	Attribute Value Accuracy -- an estimate of the accuracy of the assignment of attribute values.
1801		Type: real
1802		Domain: free real
1803		Short Name: attrva
1804	5.1.2.9.2	Attribute Value Accuracy Explanation -- the definition of the Attribute Value Accuracy measure and
1805		units, and a description of how the estimate was derived.
1806		Type: text
1807		Domain: free text
1808		Short Name: attrvae
1809	5.1.2.10	Attribute Measurement Frequency -- the frequency with which attribute values are added.
1810		Type: real
1811		Domain: "Unknown" "As needed" "Irregular" "None planned" free text
1812		Short Name: attrmfrq
1813	5.2	Overview Description -- summary of, and citation to detailed description of, the information content of the data
1814		set.
1815		Type: compound
1816		Short Name: overview
1817	5.2.1	Entity and Attribute Overview -- detailed summary of the information contained in a data set.
1818		Type: text
1819		Domain: free text
1820		Short Name: eaover
1821	5.2.2	Entity and Attribute Detail Citation -- reference to the complete description of the entity types, attributes, and
1822		attribute values for the data set.
1823		Type: text
1824		Domain: free text
1825		Short Name: eadetcit

1826	Distribution Information
1827	6 Distribution Information -- information about the distributor of and options for obtaining the data set.
1828	Type: compound
1829	Short Name: distinfo
1830	Distribution_Information =
1831	Distributor +
1832	0{Resource_Description}1 +
1833	Distribution_Liability +
1834	0{Standard_Order_Process}n +
1835	0{Custom_Order_Process}1 +
1836	(Technical_Prerequisites) +
1837	(Available_Time_Period)
1838	Distributor =
1839	Contact_Information <i>(see section 10 for production rules)</i>
1840	Standard_Order_Process =
1841	[Non-digital_Form
1842	1{Digital_Form}n ] +
1843	Fees +
1844	(Ordering_Instructions) +
1845	(Turnaround)
1846	Digital_Form =
1847	Digital_Transfer_Information +
1848	Digital_Transfer_Option
1849	Digital_Transfer_Information =
1850	Format_Name +
1851	([Format_Version_Number
1852	Format_Version_Date] +
1853	(Format_Specification) ) +
1854	(Format_Information_Content) +
1855	0{File-Decompression_Technique}1 +
1856	(Transfer_Size)
1857	Digital_Transfer_Option =
1858	1{ [Online_Option
1859	Offline_Option] }n
1860	Online_Option =
1861	1{Computer_Contact_Information}n +
1862	(Access_Instructions) +
1863	(Online_Computer_and_Operating_System)
1864	Computer_Contact_Information =
1865	[Network_Address
1866	Dialup_Instructions]
1867	Network_Address =
1868	1{Network_Resource_Name}n
1869	Dialup_Instructions =

1870		Lowest_BPS +
1871		0{Highest_BPS}1 +
1872		Number_DataBits +
1873		Number_StopBits +
1874		Parity +
1875		0{Compression_Support}1 +
1876		1{Dialup_Telephone}n +
1877		1{Dialup_File_Name}n
1878		Offline_Option =
1879		Offline_Media +
1880		0{Recording_Capacity}1
1881		1{Recording_Format}n +
1882		0{Compatibility_Information}1
1883		Recording_Capacity =
1884		1{Recording_Density}n +
1885		Recording_Density_Units
1886	Available_Time_Period =	
1887		Time_Period_Information <i>(see section 9 for production rules)</i>
1888	6.1 Distributor -- the party from whom the data set may be obtained.	
1889	Type: compound	
1890	Short Name: distrib	
1891	6.2 Resource Description -- the identifier by which the distributor knows the data set.	
1892	Type: text	
1893	Domain: free text	
1894	Short Name: resdesc	
1895	6.3 Distribution Liability -- statement of the liability assumed by the distributor.	
1896	Type: text	
1897	Domain: free text	
1898	Short Name: distliab	
1899	6.4 Standard Order Process -- the common ways in which the data set may be obtained or received, and related	
1900	instructions and fee information.	
1901	Type: compound	
1902	Short Name: stdorder	
1903	6.4.1 Non-digital Form -- the description of options for obtaining the data set on non-computer-compatible media.	
1904	Type: text	
1905	Domain: free text	
1906	Short Name: nondig	
1907	6.4.2 Digital Form -- the description of options for obtaining the data set on computer-compatible media.	
1908	Type: compound	
1909	Short Name: digform	
1910	6.4.2.1 Digital Transfer Information - description of the form of the data to be distributed.	
1911	Type: compound	
1912	Short Name: digtinfo	
1913	6.4.2.1.1 Format Name -- the name of the data transfer format.	



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1914		Type: text
1915		Domain: domain values from the table below; free text
1916		Short Name: formname
1917		Domain
1918		<u>Value</u> <u>Definition</u>
1919		"ARCE" ARC/INFO Export format
1920		"ARCG" ARC/INFO Generate format
1921		"ASCII" ASCII file, formatted for text attributes, declared format
1922		"BIL" Imagery, band interleaved by line
1923		"BIP" Imagery, band interleaved by pixel
1924		"BSQ" Imagery, band interleaved sequential
1925		"CDF" Common Data Format
1926		"CFF" Cartographic Feature File (U.S. Forest Service)
1927		"COORD" User-created coordinate file, declared format
1928		"DEM" Digital Elevation Model format (U.S. Geological Survey)
1929		"DFAD" Digital Feature Analysis Data (Defense Mapping Agency)
1930		"DGN" Microstation format (Intergraph Corporation)
1931		"DIGEST" Digital Geographic Information Exchange Standard
1932		"DLG" Digital Line Graph (U.S. Geological Survey)
1933		"DTED" Digital Terrain Elevation Data (MIL-D-89020)
1934		"DWG" AutoCAD Drawing format
1935		"DX90" Data Exchange '90
1936		"DXF" AutoCAD Drawing Exchange Format
1937		"ERDAS" ERDAS image files (ERDAS Corporation)
1938		"GRASS" Geographic Resources Analysis Support System
1939		"HDF" Hierarchical Data Format
1940		"IGDS" Interactive Graphic Design System format (Intergraph Corporation)
1941		"IGES" Initial Graphics Exchange Standard
1942		"MOSS" Multiple Overlay Statistical System export file
1943		"netCDF" network Common Data Format
1944		"NITF" National Imagery Transfer Format
1945		"RPF" Raster Product Format (Defense Mapping Agency)
1946		"RVC" Raster Vector Converted format (MicroImages)
1947		"RVF" Raster Vector Format (MicroImages)
1948		"SDTS" Spatial Data Transfer Standard (Federal Information Processing Standard
1949		173)
1950		"SIF" Standard Interchange Format (DOD Project 2851)
1951		"SLF" Standard Linear Format (Defense Mapping Agency)
1952		"TIFF" Tagged Image File Format
1953		"TGRN" Topologically Integrated Geographic Encoding and Referencing (TIGER)
1954		Line format (Bureau of the Census)
1955		"VPF" Vector Product Format (Defense Mapping Agency)
1956	6.4.2.1.2	Format Version Number -- version number of the format.
1957		Type: text
1958		Domain: free text
1959		Short Name: formvern
1960	6.4.2.1.3	Format Version Date -- date of the version of the format.
1961		Type: date
1962		Domain: free date
1963		Short Name: formverd
1964	6.4.2.1.4	Format Specification -- name of a subset, profile, or product specification of the format.
1965		Type: text

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1966		Domain: free text
1967		Short Name: formspec
1968	6.4.2.1.5	Format Information Content -- description of the content of the data encoded in a format.
1969		Type: text
1970		Domain: free text
1971		Short Name: formcont
1972	6.4.2.1.6	File Decompression Technique -- recommendations of algorithms or processes (including means of obtaining these algorithms or processes) that can be applied to read or expand data sets to which data compression techniques have been applied.
1973		Type: text
1974		Domain: "No compression applied" free text
1975		Short Name: filedec
1976		
1977		
1978	6.4.2.1.7	Transfer Size -- the size, or estimated size, of the transferred data set in megabytes.
1979		Type: real
1980		Domain: Transfer Size > 0.0
1981		Short Name: transize
1982	6.4.2.2	Digital Transfer Option -- the means and media by which a data set is obtained from the distributor.
1983		Type: compound
1984		Short Name: digtopt
1985	6.4.2.2.1	Online Option -- information required to directly obtain the data set electronically.
1986		Type: compound
1987		Short Name: onlinopt
1988	6.4.2.2.1.1	Computer Contact Information -- instructions for establishing communications with the distribution computer.
1989		Type: compound
1990		Short Name: computer
1991		
1992	6.4.2.2.1.1.1	Network Address -- the electronic address from which the data set can be obtained from the distribution computer.
1993		Type: compound
1994		Short Name: networka
1995		
1996	6.4.2.2.1.1.1.1	Network Resource Name -- the name of the file or service from which the data set can be obtained.
1997		Type: text
1998		Domain: free text
1999		Short Name: networkr
2000		
2001	6.4.2.2.1.1.2	Dialup Instructions -- information required to access the distribution computer remotely through telephone lines.
2002		Type: compound
2003		Short Name: dialinst
2004		
2005	6.4.2.2.1.1.2.1	Lowest BPS -- lowest or only speed for the connection's communication, expressed in bits per second.
2006		Type: integer
2007		Domain: Lowest BPS >= 110
2008		Short Name: lowbps
2009		

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2010	6.4.2.2.1.1.2.2	Highest BPS -- highest speed for the connection's communication, expressed in bits
2011		per second. Used in cases when a range of rates are provided.
2012		Type: integer
2013		Domain: Highest BPS > Lowest BPS
2014		Short Name: highbps
2015	6.4.2.2.1.1.2.3	Number DataBits -- number of data bits in each character exchanged in the
2016		communication.
2017		Type: integer
2018		Domain: 7 <= Number DataBits <= 8
2019		Short Name: numdata
2020	6.4.2.2.1.1.2.4	Number StopBits -- number of stop bits in each character exchanged in the
2021		communication.
2022		Type: integer
2023		Domain: 1 <= Number StopBits <= 2
2024		Short Name: numstop
2025	6.4.2.2.1.1.2.5	Parity -- parity error checking used in each character exchanged in the
2026		communication.
2027		Type: text
2028		Domain: "None" "Odd" "Even" "Mark" "Space"
2029		Short Name: parity
2030	6.4.2.2.1.1.2.6	Compression Support -- data compression available through the modem service to
2031		speed data transfer.
2032		Type: text
2033		Domain: "V.32" "V.32bis" "V.42" "V.42bis" free text
2034		Short Name: compress
2035	6.4.2.2.1.1.2.7	Dialup Telephone -- the telephone number of the distribution computer.
2036		Type: text
2037		Domain: free text
2038		Short Name: dialtel
2039	6.4.2.2.1.1.2.8	Dialup File Name -- the name of a file containing the data set on the distribution
2040		computer.
2041		Type: text
2042		Domain: free text
2043		Short Name: dialfile
2044	6.4.2.2.1.2	Access Instructions -- instructions on the steps required to access the data set.
2045		Type: text
2046		Domain: free text
2047		Short Name: accinstr
2048	6.4.2.2.1.3	Online Computer and Operating System -- the brand of distribution computer and its operating
2049		system.
2050		Type: text
2051		Domain: free text
2052		Short Name: oncomp
2053	6.4.2.2.2	Offline Option -- information about media-specific options for receiving the data set.
2054		Type: compound
2055		Short Name: offoptn

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2056	6.4.2.2.2.1	Offline Media -- name of the media on which the data set can be received.
2057		Type: text
2058		Domain: "CD-ROM" "3-1/2 inch floppy disk" "5-1/4 inch floppy disk" "9-track tape" "4
2059		mm cartridge tape" "8 mm cartridge tape" "1/4-inch cartridge tape" free text
2060		Short Name: offmedia
2061	6.4.2.2.2.2.	Recording Capacity -- the density of information to which data are written. Used in cases
2062		where different recording capacities are possible.
2063		Type: compound
2064		Short Name: reccap
2065	6.4.2.2.2.2.1	Recording Density -- the density in which the data set can be recorded.
2066		Type: real
2067		Domain: Recording Density > 0.0
2068		Short Name: recden
2069	6.4.2.2.2.2.2	Recording Density Units -- the units of measure for the recording density.
2070		Type: text
2071		Domain: free text
2072		Short Name: recdenu
2073	6.4.2.2.2.3	Recording Format -- the options available or method used to write the data set to the medium.
2074		Type: text
2075		Domain: "cpio" "tar" "High Sierra" "ISO 9660" "ISO 9660 with Rock Ridge
2076		extensions" "ISO 9660 with Apple HFS extensions" free text
2077		Short Name: recfmt
2078	6.4.2.2.2.4	Compatibility Information --- description of other limitations or requirements for using the
2079		medium.
2080		Type: text
2081		Domain: free text
2082		Short Name: compat
2083	6.4.3	Fees -- the fees and terms for retrieving the data set.
2084		Type: text
2085		Domain: free text
2086		Short Name: fees
2087	6.4.4	Ordering Instructions -- general instructions and advice about, and special terms and services provided for,
2088		the data set by the distributor.
2089		Type: text
2090		Domain: free text
2091		Short Name: ordering
2092	6.4.5	Turnaround -- typical turnaround time for the filling of an order.
2093		Type: text
2094		Domain: free text
2095		Short Name: turnarnd
2096	6.5	Custom Order Process -- description of custom distribution services available, and the terms and conditions for
2097		obtaining these services.
2098		Type: text
2099		Domain: free text
2100		Short Name: custom

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- 2101 6.6 Technical Prerequisites -- description of any technical capabilities that the consumer must have to use the data set  
2102 in the form(s) provided by the distributor.  
2103 Type: text  
2104 Domain: free text  
2105 Short Name: techpreq
- 2106 6.7 Available Time Period -- the time period when the data set will be available from the distributor.  
2107 Type: compound  
2108 Short Name: availabl

2109	Metadata Reference Information
2110	7 Metadata Reference Information -- information on the currentness of the metadata information, and the
2111	responsible party.
2112	Type: compound
2113	Short Name: metainfo
2114	Metadata_Reference_Information =
2115	Metadata_Date +
2116	( Metadata_Review_Date +
2117	(Metadata_Future_Review_Date) ) +
2118	Metadata_Contact +
2119	Metadata_Standard_Name +
2120	Metadata_Standard_Version +
2121	0{Metadata_Time_Convention}1 +
2122	(Metadata_Access_Constraints) +
2123	(Metadata_Use_Constraints) +
2124	(Metadata_Security_Information) +
2125	0{Metadata_Extension}n
2126	Metadata_Contact =
2127	Contact_Information ( <i>see section 10 for production rules</i> )
2128	Metadata_Security_Information =
2129	Metadata_Security_Classification_System +
2130	Metadata_Security_Classification +
2131	Metadata_Security_Handling_Description
2132	Metadata_Extensions =
2133	0{Profile_Name}1
2134	0{Online_Linkage}n
2135	7.1 Metadata Date -- the date that the metadata were created or last updated.
2136	Type: date
2137	Domain: free date
2138	Short Name: metd
2139	7.2 Metadata Review Date -- the date of the latest review of the metadata entry.
2140	Type: date
2141	Domain: free date; Metadata Review Date later than Metadata Date
2142	Short Name: metrd
2143	7.3 Metadata Future Review Date -- the date by which the metadata entry should be reviewed.
2144	Type: date
2145	Domain: free date; Metadata Future Review Date later than Metadata Review Date
2146	Short Name: metfrd
2147	7.4 Metadata Contact -- the party responsible for the metadata information.
2148	Type: compound
2149	Short Name: metc
2150	7.5 Metadata Standard Name -- the name of the metadata standard used to document the data set.
2151	Type: text
2152	Domain: "FGDC Content Standard for Digital Geospatial Metadata" free text
2153	Short Name: metstdn
2154	7.6 Metadata Standard Version -- identification of the version of the metadata standard used to document the data set.

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2155	Type: text
2156	Domain: free text
2157	Short Name: metstdv
2158	7.7 Metadata Time Convention -- form used to convey time of day information in the metadata entry. Used if time of
2159	day information is included in the metadata for a data set.
2160	Type: text
2161	Domain: "local time" "local time with time differential factor" "universal time"
2162	Short Name: mettc
2163	7.8 Metadata Access Constraints -- restrictions and legal prerequisites for accessing the metadata. These include any
2164	access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions
2165	or limitations on obtaining the metadata.
2166	Type: text
2167	Domain: free text
2168	Short Name: metac
2169	7.9 Metadata Use Constraints -- restrictions and legal prerequisites for using the metadata after access is granted.
2170	These include any access constraints applied to assure the protection of privacy or intellectual property, and any
2171	special restrictions or limitations on obtaining the metadata.
2172	Type: text
2173	Domain: free text
2174	Short Name: metuc
2175	7.10 Metadata Security Information -- handling restrictions imposed on the metadata because of national security,
2176	privacy, or other concerns.
2177	Type: compound
2178	Short Name: metsti
2179	7.10.1 Metadata Security Classification System -- name of the classification system for the metadata.
2180	Type: text
2181	Domain: free text
2182	Short Name: metscs
2183	7.10.2 Metadata Security Classification -- name of the handling restrictions on the metadata.
2184	Type: text
2185	Domain: "Top secret" "Secret" "Confidential" "Restricted" "Unclassified" "Sensitive" free text
2186	Short Name: metsc
2187	7.10.3 Metadata Security Handling Description -- additional information about the restrictions on handling the
2188	metadata.
2189	Type: text
2190	Domain: free text
2191	Short Name: metshd
2192	7.11 Metadata Extensions -- a reference to extended elements to the standard which may be defined by a metadata
2193	producer or a user community. Extended elements are elements outside the Standard, but needed by the metadata
2194	producer. If extended elements are created, they must follow the guidelines in Appendix D, Guidelines for Creating
2195	Extended Elements to the Content Standard for Digital Geospatial Metadata.
2196	Type: text
2197	Domain: free text
2198	Short Name: metextns
2199	7.11.1 Online Linkage -- the name of an online computer resource that contains the data set. Entries should
2200	follow the Uniform Resource Locator convention of the Internet.

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2201		Type: text
2202		Domain: free text
2203		Short Name: onlink
2204	7.11.2	Profile Name --
2205		Type: text
2206		Domain: free text
2207		Short Name: metprof



2208		Citation Information
2209	8	Citation Information -- the recommended reference to be used for the data set. <i>(Note: this section provides a</i>
2210		<i>means of stating the citation of a data set, and is used by other sections of the metadata standard. This</i>
2211		<i>section is never used alone.)</i>
2212		Type: compound
2213		Short Name: citeinfo
2214		Citation_Information =
2215		1{Originator}n +
2216		Publication_Date +
2217		(Publication_Time) +
2218		Title +
2219		0{Edition}1 +
2220		0{Geospatial_Data_Presentation_Form}1 +
2221		0{Series_Information}1 +
2222		0{Publication_Information}1 +
2223		0{Other_Citation_Details}1 +
2224		(1{Online_Linkage}n) +
2225		0{Larger_Work_Citation}1
2226		Series_Information =
2227		Series_Name +
2228		Issue_Identification
2229		Publication_Information =
2230		Publication_Place +
2231		Publisher
2232		Larger_Work_Citation =
2233		Citation_Information
2234	8.1	Originator -- the name of an organization or individual that developed the data set. If the name of editors or
2235		compilers are provided, the name must be followed by "(ed.)" or "(comp.)" respectively.
2236		Type: text
2237		Domain: "Unknown" free text
2238		Short Name: origin
2239	8.2	Publication Date -- the date when the data set is published or otherwise made available for release.
2240		Type: date
2241		Domain: "Unknown" "Unpublished material" free date
2242		Short Name: pubdate
2243	8.3	Publication Time -- the time of day when the data set is published or otherwise made available for release.
2244		Type: time
2245		Domain: "Unknown" free time
2246		Short Name: pubtime
2247	8.4	Title -- the name by which the data set is known.
2248		Type: text
2249		Domain: free text
2250		Short Name: title
2251	8.5	Edition -- the version of the title.
2252		Type: text

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2253	Domain: free text
2254	Short Name: edition
2255	8.6 Geospatial Data Presentation Form -- the mode in which the geospatial data is represented.
2256	Type: text
2257	Domain: (the listed domain is from pp. 88-91 <i>in</i> Anglo-American Committee on Cataloguing of Cartographic
2258	Materials, 1982, Cartographic materials: A manual of interpretation for AACR2: Chicago, American Library
2259	Association):
2260	"atlas" "diagram" "globe" "map" "model" "profile" "remote-sensing image" "section" "view", free text
2261	Short Name: geoform
2262	8.7 Series Information -- the identification of the series publication of which the data set is a part.
2263	Type: compound
2264	Short Name: serinfo
2265	8.7.1 Series Name -- the name of the series publication of which the data set is a part.
2266	Type: text
2267	Domain: free text
2268	Short Name: sername
2269	8.7.2 Issue Identification -- information identifying the issue of the series publication of which the data set is a part.
2270	Type: text
2271	Domain: free text
2272	Short Name: issue
2273	8.8 Publication Information -- publication details for published data sets.
2274	Type: compound
2275	Short Name: pubinfo
2276	8.8.1 Publication Place -- the name of the city (and state or province, and country, if needed to identify the city)
2277	where the data set was published or released.
2278	Type: text
2279	Domain: free text
2280	Short Name: pubplace
2281	8.8.2 Publisher -- the name of the individual or organization that published the data set.
2282	Type: text
2283	Domain: free text
2284	Short Name: publish
2285	8.9 Other Citation Details -- other information required to complete the citation.
2286	Type: text
2287	Domain: free text
2288	Short Name: othercit
2289	8.10 Online Linkage -- the name of an online computer resource that contains the data set. Entries should follow
2290	the Uniform Resource Locator convention of the Internet.
2291	Type: text
2292	Domain: free text
2293	Short Name: onlink
2294	8.11 Larger Work Citation -- the information identifying a larger work in which the data set is included.
2295	Type: compound
2296	Short Name: lworkcit

2297		Time Period Information
2298	9	Time Period Information -- information about the date and time of an event. <i>(Note: this section provides a means of stating temporal information, and is used by other sections of the metadata standard. This section is never used alone.)</i>
2299		
2300		Type: compound
2301		Short Name: timeinfo
2302		
2303		Time_Period_Information =
2304		[Single_Date/Time
2305		Multiple_Dates/Times
2306		Range_of_Dates/Times ]
2307		Single_Date/Time =
2308		Calendar_Date +
2309		(Time_of_Day)
2310		Multiple_Dates/Times =
2311		2{Single_Date/Time}n
2312		Range_of_Dates/Times =
2313		Beginning_Date +
2314		(Beginning_Time) +
2315		Ending_Date +
2316		(Ending_Time)
2317	9.1	Single Date/Time -- means of encoding a single date and time.
2318		Type: compound
2319		Short Name: sngdate
2320	9.1.1	Calendar Date -- the year (and optionally month, or month and day).
2321		Type: date
2322		Domain: "Unknown" free date
2323		Short Name: caldate
2324	9.1.2	Time of Day -- the hour (and optionally minute, or minute and second) of the day.
2325		Type: time
2326		Domain: "Unknown" free time
2327		Short Name: time
2328	9.2	Multiple Dates/Times -- means of encoding multiple individual dates and times.
2329		Type: compound
2330		Short Name: mdattim
2331	9.3	Range of Dates/Times -- means of encoding a range of dates and times.
2332		Type: compound
2333		Short Name: rngdates
2334	9.3.1	Beginning Date -- the first year (and optionally month, or month and day) of the event.
2335		Type: date
2336		Domain: "Unknown" free date
2337		Short Name: begdate
2338	9.3.2	Beginning Time -- the first hour (and optionally minute, or minute and second) of the day for the event.
2339		Type: time

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2340		Domain: "Unknown" free time
2341		Short Name: begtime
2342	9.3.3	Ending Date -- the last year (and optionally month, or month and day) for the event.
2343		Type: date
2344		Domain: "Unknown" "Present" free date
2345		Short Name: enddate
2346	9.3.4	Ending Time -- the last hour (and optionally minute, or minute and second) of the day for the event.
2347		Type: time
2348		Domain: "Unknown" free time
2349		Short Name: endtime

2350	Contact Information
2351	10 Contact Information -- Identity of, and means to communicate with, person(s) and organization(s) associated
2352	with the data set. <i>(Note: this section provides a means of identifying individuals and organizations, and is</i>
2353	<i>used by other sections of the metadata standard. This section is never used alone.)</i>
2354	Type: compound
2355	Short Name: cntinfo
2356	Contact_Information =
2357	[Contact_Person_Primary
2358	Contact_Organization_Primary] +
2359	(Contact_Position) +
2360	1 {Contact_Address}n +
2361	1 {Contact_Voice_Telephone}n +
2362	(1 {Contact_TDD/TTY_Telephone}n) +
2363	(1 {Contact_Facsimile_Telephone}n) +
2364	(1 {Contact_Electronic_Mail_Address}n) +
2365	(Hours_of_Service) +
2366	(Contact_Instructions)
2367	Contact_Person_Primary =
2368	Contact_Person +
2369	(Contact_Organization)
2370	Contact_Organization_Primary =
2371	Contact_Organization +
2372	(Contact_Person)
2373	Contact_Address =
2374	Address_Type +
2375	0 {Address}n +
2376	City +
2377	State_or_Province +
2378	Postal_Code +
2379	(Country)
2380	10.1 Contact Person Primary -- the person, and the affiliation of the person, associated with the data set. Used in
2381	cases where the association of the person to the data set is more significant than the association of the
2382	organization to the data set.
2383	Type: compound
2384	Short Name: cntperp
2385	10.1.1 Contact Person -- the name of the individual to which the contact type applies.
2386	Type: text
2387	Domain: free text
2388	Short Name: cntper
2389	10.1.2 Contact Organization -- the name of the organization to which the contact type applies.
2390	Type: text
2391	Domain: free text
2392	Short Name: cntorg
2393	10.2 Contact Organization Primary -- the organization, and the member of the organization, associated with the
2394	data set. Used in cases where the association of the organization to the data set is more significant than the
2395	association of the person to the data set.

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2396	Type: compound
2397	Short Name: cntorgp
2398	10.3Contact Position -- the title of individual.
2399	Type: text
2400	Domain: free text
2401	Short Name: cntpos
2402	10.4Contact Address -- the address for the organization or individual.
2403	Type: compound
2404	Short Name: cntaddr
2405	10.4.1 Address Type -- the information provided by the address.
2406	Type: text
2407	Domain: "mailing" "physical" "mailing and physical", free text
2408	Short Name: addrtype
2409	10.4.2 Address -- an address line for the address.
2410	Type: text
2411	Domain: free text
2412	Short Name: address
2413	10.4.3 City -- the city of the address.
2414	Type: text
2415	Domain: free text
2416	Short Name: city
2417	10.4.4 State or Province -- the state or province of the address.
2418	Type: text
2419	Domain: free text
2420	Short Name: state
2421	10.4.5 Postal Code -- the ZIP or other postal code of the address.
2422	Type: text
2423	Domain: free text
2424	Short Name: postal
2425	10.4.6 Country -- the country of the address.
2426	Type: text
2427	Domain: free text
2428	Short Name: country
2429	10.5Contact Voice Telephone -- the telephone number by which individuals can speak to the organization or individual.
2430	
2431	Type: text
2432	Domain: free text
2433	Short Name: cntvoice
2434	10.6Contact TDD/TTY Telephone -- the telephone number by which hearing-impaired individuals can contact the organization or individual.
2435	
2436	Type: text
2437	Domain: free text
2438	Short Name: cnttdd
2439	10.7Contact Facsimile Telephone -- the telephone number of a facsimile machine of the organization or individual.

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2440	Type: text
2441	Domain: free text
2442	Short Name: cntfax
2443	10.8Contact Electronic Mail Address -- the address of the electronic mailbox of the organization or individual.
2444	Type: text
2445	Domain: free text
2446	Short Name: cntemail
2447	10.9Hours of Service -- time period when individuals can speak to the organization or individual.
2448	Type: text
2449	Domain: free text
2450	Short Name: hours
2451	10.10Contact Instructions -- supplemental instructions on how or when to contact the individual or organization.
2452	Type: text
2453	Domain: free text
2454	Short Name: cntinst

Glossary

*[Most of the terms and definitions are from Department of Commerce, 1992, Spatial Data Transfer Standard (SDTS) (Federal Information Processing Standard 173): Washington: Department of Commerce, National Institute of Standards and Technology.]*

abscissa -- the coordinate of a point in a plane Cartesian coordinate system obtained by measuring parallel to the x-axis ("the 'x' value").

accuracy -- the closeness of results of observations, computations or estimates to the true values or the values accepted as being true.

altitude -- elevation above or below a reference datum, as defined in Federal Information Processing Standard 70-1. See also elevation.

area -- a generic term for a bounded, continuous, two-dimensional object that may or may not include its boundary.

area chain -- a chain that explicitly references left and right polygons and not start and end nodes. It is a component of a two-dimensional manifold.

area point -- a representative point within an area usually carrying attribute information about that area.

arc -- a locus of points that forms a curve that is defined by a mathematical expression.

attribute -- a defined characteristic of an entity type (e.g. composition).

attribute value -- a specific quality or quantity assigned to an attribute (e.g., steel), for a specific entity instance.

cardinality -- the number of elements in an extended compound element

chain -- a directed nonbranching sequence of nonintersecting line segments and (or) arcs bounded by nodes, not necessarily distinct, at each end. Area chain, complete chain, and network chain are special cases of chain, and share all characteristics of the general case as defined above.

child -- the name of the data element which may occur under this data element. A child element may be an extended or a standard element.

clearinghouse -- see National Geospatial Data Clearinghouse.

complete chain -- a chain that explicitly references left and right polygons and start and end nodes. It is a component of a two-dimensional manifold.

compound element -- a group of data elements and other compound elements. Compound elements represent higher-level concepts that cannot be represented by individual data elements.

coordinates -- pairs of numbers expressing horizontal distances along orthogonal axes; alternatively, triplets of numbers measuring horizontal and vertical distances.

data element -- a logically primitive item of data.

data set -- a collection of related data.



- 2488 depth -- perpendicular distance of an interior point from the surface of an object.
- 2489 developable surface -- a surface that can be flattened to form a plane without compressing or stretching any part of it.  
2490 Examples include cones and cylinders.
- 2491 digital image -- a two-dimensional array of regularly spaced picture elements (pixels) constituting a picture.
- 2492 digital volume -- a three-dimensional array of regularly spaced volume elements (voxels) constituting a volume.
- 2493 domain -- in the definition of the elements in the metadata standard, the domain identifies valid values for a data  
2494 element.
- 2495 Edge, Topology Level 0 -- VPF term for a string.
- 2496 Edge, Topology Level 1 -- VPF term for a network chain in a network (in SDTS, a "Network chain, non-planar  
2497 graph").
- 2498 Edge, Topology Level 2 -- VPF term for a network chain in a planar graph (in SDTS, a "Network chain, planar  
2499 graph").
- 2500 Edge, Topology Level 3 -- VPF term for a complete chain.
- 2501 elevation -- conforming to Federal Information Processing Standard 70-1, the term "altitude" is used in this standard,  
2502 rather than the common term elevation.
- 2503 entity instance -- a spatial phenomenon of a defined type that is embedded in one or more phenomena of different type,  
2504 or that has at least one key attribute value different from the corresponding attribute values of surrounding phenomena  
2505 (e.g., the 10 Street Bridge).
- 2506 entity point -- a point used for identifying the location of point features (or areal features collapsed to a point), such as  
2507 towers, buoys, buildings, places, etc.
- 2508 entity type -- the definition and description of a set into which similar entity instances are classified (e.g., bridge).
- 2509 explicit -- method of identifying positions directly by pairs (for horizontal positions) or triplets (for horizontal and  
2510 vertical positions) of numbers.
- 2511 extended element -- a user-defined metadata element included in a metadata collection. Extended elements may be  
2512 defined by a data set producer or a user community. Extended elements are elements outside the Standard, but needed  
2513 by the data set producer. If extended elements are created, they must follow the guidelines in Appendix D, Guidelines  
2514 for Creating Extended Elements in the Content Standard for Digital Geospatial Metadata.
- 2515 Face, Topology Level 3 -- VPF term for a GT-polygon composed of rings.
- 2516 G-polygon -- an area consisting of an interior area, one outer G-ring and zero or more nonintersecting, nonnested inner  
2517 G-rings. No ring, inner or outer, shall be collinear with or intersect any other ring of the same G-polygon.
- 2518 G-ring --a string composed of pairs of longitude and latitude coordinates that define a closed non-intersecting  
2519 boundary.
- 2520 G-ring point -- a scalar consisting of a set of ordered pairs of floating-point numbers, separated by commas, in which  
2521 the first number in each pair is the longitude of a point and the second is the latitude of the point. Longitude and  
2522 latitude are specified in decimal degrees with north latitudes positive and south negative, east longitude positive and  
2523 west negative.  
2524

- 2525 geospatial data -- information that identifies the geographic location and characteristics of natural or constructed  
2526 features and boundaries on the earth. This information may be derived from, among other things, remote sensing,  
2527 mapping, and surveying technologies.
- 2528 graph -- a set of topologically interrelated zero-dimensional (node), one-dimensional (link or chain), and sometimes  
2529 two-dimensional (GT-polygon) objects that conform to a set of defined constraint rules. Numerous rule sets can be  
2530 used to distinguish different types of graphs. Three such types, planar graph, network, and two-dimensional manifold,  
2531 are used in this standard. All three share the following rules: each link or chain is bounded by an ordered pair of nodes,  
2532 not necessarily distinct; a node may bound one or more links or chains; and links or chains may only intersect at nodes.  
2533 Planar graphs and networks are two specialized types of graphs, and a two-dimensional manifold is an even more  
2534 specific type of planar graph.
- 2535 grid -- (1) a set of grid cells forming a regular, or nearly regular, tessellation of a surface; (2) a set of points arrayed in a  
2536 pattern that forms a regular, or nearly regular, tessellation of a surface. The tessellation is regular if formed by  
2537 repeating the pattern of a regular polygon, such as a square, equilateral triangle, or regular hexagon. The tessellation is  
2538 nearly regular if formed by repeating the pattern of an "almost" regular polygon such as a rectangle, non-square paral-  
2539 lelogram, or non-equilateral triangle.
- 2540 grid cell -- a two-dimensional object that represents the smallest nondivisible element of a grid.
- 2541 GT-polygon -- an area that is an atomic two-dimensional component of one and only one two-dimensional manifold.  
2542 The boundary of a GT-polygon may be defined by GT-rings created from its bounding chains. A GT-polygon may also  
2543 be associated with its chains (either the bounding set, or the complete set) by direct reference to these chains. The  
2544 complete set of chains associated with a GT-polygon may also be found by examining the polygon references on the  
2545 chains.
- 2546 GT-ring -- a ring created from complete and (or) area chains.
- 2547 horizontal -- tangent to the geoid or parallel to a plane that is tangent to the geoid.
- 2548 implicit -- method of identifying positions by a place in an array of values.
- 2549 interior area -- an area not including its boundary.
- 2550 label point -- a reference point used for displaying map and chart text (e.g., feature names) to assist in feature  
2551 identification.
- 2552 latitude -- angular distance measured on a meridian north or south from the equator.
- 2553 layer -- an integrated, areally distributed, set of spatial data usually representing entity instances within one theme, or  
2554 having one common attribute or attribute value in an association of spatial objects. In the context of raster data, a layer  
2555 is specifically a two-dimensional array of scalar values associated with all of part of a grid or image.
- 2556 line -- a generic term for a one-dimensional object.
- 2557 line segment -- a direct line between two points.
- 2558 link -- a topological connection between two nodes. A link may be directed by ordering its nodes.
- 2559 longitude -- angular distance between the plane of a meridian east or west from the plane of the meridian of Greenwich.
- 2560 map -- a spatial representation, usually graphic on a flat surface, of spatial phenomena.
- 2561 media -- the physical devices used to record, store, and (or) transmit data.

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- 2562 meridian -- a great circle on the Earth that passes through the geographic poles.
- 2563 metadata -- data about the content, quality, condition, and other characteristics of data.
- 2564 name -- the name of an extended element. The extended element name must not be the name of any other element in  
2565 the Standard.
- 2566 National Geospatial Data Clearinghouse -- a distributed network of geospatial data producers, managers, and users  
2567 linked electronically. Building on initiatives such as the national information infrastructure, the clearinghouse uses a  
2568 distributed, electronically connected network, such as the Internet. Each data provider will describe available data in  
2569 an electronic form, and provide these descriptions (or "metadata") using means that can be accessed over a  
2570 communications network. Thus, the data for the clearinghouse are located at the sites of data producers (or, where  
2571 more efficient, at the sites of intermediaries) throughout the country. Using the network, users will search these  
2572 descriptions to locate data that are suitable for their applications.
- 2573 network -- a graph without two dimensional objects. If projected onto a two-dimensional surface, a network can have  
2574 either more than one node at a point and (or) intersecting links or chains without corresponding nodes.
- 2575 network chain -- a chain that explicitly references start and end nodes and not left and right polygons. It is a component  
2576 of a network.
- 2577 node -- a zero-dimensional object that is a topological junction of two or more links or chains, or an end point of a link  
2578 or chain.
- 2579 Node, Topology Level 0 -- VPF term for a point (in SDTS, a "point").
- 2580 Node, Topology Level 1 -- VPF term for a node on a network (in SDTS, a "node, network").
- 2581 Node, Topology Level 2 -- VPF term for a node on a planar graph (in SDTS, a "node, planar graph").
- 2582 Node, Topology Level 3 -- VPF term for a point used to represent isolated features. These are topologically linked to a  
2583 containing face.
- 2584 object -- a digital representation of all or part of an entity instance.
- 2585 optionality - The optionality of a section or compound element always takes precedence over the elements that it  
2586 contains. Once a section or compound element is recognized by the data set producer as applicable, then the  
2587 optionality of its subordinate elements is to be interpreted. See Production Rules section for additional interpretive  
2588 guidance.
- 2589 ordinate -- the coordinate of a point in a plane cartesian coordinate system obtained by measuring parallel to the y-axis  
2590 ("the 'y' value").
- 2591 parent -- the name of the data element under which a given data element may occur. A parent element may be an  
2592 extended or a standard element.
- 2593 phenomenon -- a fact, occurrence or circumstance. Route 10, George Washington National Forest, and Chesterfield  
2594 County are all phenomena.
- 2595 pixel -- two-dimensional picture element that is the smallest nondivisible element of a digital image.
- 2596 planar graph -- the node and link or chain objects of the graph occur or can be represented as though they occur upon a  
2597 planar surface. Not more than one node may exist at any given point on the surface. Links or chains may only intersect  
2598 at nodes.

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- 2599 point -- a zero-dimensional object that specifies geometric location. One coordinate pair or triplet specifies the  
2600 location. Area point, entity point, and label point are special implementations of the general case.
- 2601 primitive -- the quality of not being subdivided; atomic.
- 2602 quality -- an essential or distinguishing characteristic necessary for cartographic data to be fit for use.
- 2603 raster -- one or more overlapping layers for the same grid or digital image.
- 2604 raster object - one or more images and/or grids, each grid or image representing a layer, such that corresponding grid  
2605 cells and/or pixels between layers are congruent and registered.
- 2606 rationale - a component of an extended element. The rationale is provided by the user creating the extended element to  
2607 explain the reason for its creation and its expected uses.
- 2608 repeatability --whether or not an extended element can be repeated and optionally a minimum or maximum number of  
2609 occurrences or both
- 2610 resolution -- the minimum difference between two independently measured or computed values which can be  
2611 distinguished by the measurement or analytical method being considered or used.
- 2612 ring -- sequence of nonintersecting chains or strings and (or) arcs, with closure. A ring represents a closed boundary,  
2613 but not the interior area inside the closed boundary.
- 2614 SDTS -- the Spatial Data Transfer Standard defined by Department of Commerce, 1992, Spatial Data Transfer  
2615 Standard (SDTS) (Federal Information Processing Standard 173): Washington, Department of Commerce, National  
2616 Institute of Standards and Technology.
- 2617 short name -- a unique name for each compound or primitive data element consisting of eight alphabetic characters or  
2618 less. When creating extended element short names, do not duplicate an existing standard element short name.
- 2619 source --a component of an extended element. the name of the individual or organization creating an extended element
- 2620 spatial data -- see geospatial data.
- 2621 stratum -- one of a series of layers, levels, or gradations in an ordered system. For this standard, the term is used in the  
2622 sense of (1) a region of sea, atmosphere, or geology that is distinguished by natural or arbitrary limits; (2) a  
2623 socioeconomic level of society comprised of persons of the same or similar status, especially with regard to education  
2624 or culture; or (3) a layer of vegetation, usually of the same or similar height.
- 2625 string -- a connected nonbranching sequence of line segments specified as the ordered sequence of points between  
2626 those line segments. Note: A string may intersect itself or other strings.
- 2627 two-dimensional manifold -- a planar graph and its associated two dimensional objects. Each chain bounds two and  
2628 only two, not necessarily distinct, GT-polygons. The GT-polygons are mutually exclusive and completely exhaust the  
2629 surface.
- 2630 type -- in the definition of the elements in the metadata standard, a compound element has the type "compound" to  
2631 provide a unique way to identify compound elements. For a data element, the type identifies the kind of value that can  
2632 be assigned to the data element. The choices are "integer" for integer numbers, "real" for real numbers, "text" for  
2633 ASCII characters, "date" for day of the year, and "time" for time of the day.
- 2634 universe polygon -- defines the part of the universe that is outside the perimeter of the area covered by other GT-  
2635 polygons ("covered area") and completes the two-dimensional manifold. This polygon completes the adjacency  
2636 relationships of the perimeter links. The boundary of the universe polygon is represented by one or more inner rings

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- 2637 and no outer ring. Attribution of the universe polygon may not exist, or may be substantially different from the  
2638 attribution of the covered area.
- 2639 vector -- composed of directed lines.
- 2640 vertical -- at right angles to the horizontal; includes altitude and depth.
- 2641 VPF -- the Vector Product Format defined by Department of Defense, 1992, Vector Product Format (MIL-STD-  
2642 600006): Philadelphia, Department of Defense, Defense Printing Service Detachment Office.
- 2643 void polygon -- defines a part of the two-dimensional manifold that is bounded by other GT-polygons, but otherwise  
2644 has the same characteristics as the universe polygon. The geometry and topology of a void polygon are those of a GT-  
2645 polygon. Attribution of a void polygon may not exist, or may be substantially different from the attribution of the  
2646 covered area.
- 2647 voxel -- a three-dimensional element that is the smallest nondivisible element of a digital volume.

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2649

Alphabetical List of Compound Elements and Data Elements

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## Guidelines for Creating Extended Elements in the Content Standard for Digital Geospatial Metadata

Extended elements to the Standard may be defined by a data set producer or a user community. Extended elements are elements outside the Standard, but needed by the data set producer. If extended elements are created, they must follow the guidelines presented here. The Online\_Linkage data element within Metadata\_Extensions points to a formal document containing the necessary documentation for a subsequent metadata producer to reuse the extended element. If extended elements are used in a profile, the Profile\_Name can also be included in the Metadata\_Extensions compound data element. See Appendix E for Guidelines on Creating a Profile for the Content Standard for Digital Geospatial Metadata.

It should be noted here that metadata capture and exploitation tools need to be updated to adjust to these minor modifications. At the end of Section 7, Metadata Reference Information, the following elements were added in order to handle extended elements:

Extended elements may also be created for use with non-geospatial data holdings when this practice does not conflict with other Federal standards, directives, or statutes.

Metadata\_Extensions=  
0{Online\_Linkage}n +  
0{Profile\_Name}1

If a metadata producer does not have the capability to provide online linkage, he or she may list the information in the data set.

The Online Linkage element references a structured file (or uniform resource locator) containing the following information about the extended element in the production rule dictated below: name, data type, domain values, short name, parent element, optionality (Mandatory, Mandatory-if-applicable, or Optional), cardinality, for example, (0, 1, ..., n) or (> 1 but < 10), repeatability, definition, rationale, and source. The compound element Extension\_Information is repeatable, but the primitive data elements occurring in Extension\_Information are not. Note that these elements do not appear in the metadata record itself.

Extension\_Information =  
Name +  
Short\_Name +  
Type +  
[Domain | [0{Child}n | Rule]] +  
1{Parent}n +  
(Optionality) +  
(Repeatability) +  
(Definition) +  
(Rationale) +  
(Source)

The following rules must be followed when defining extended elements:

- Extended elements must be defined as part of an existing section (Sections 1 - 10), as defined in the Standard. All existing sections (1-10) of the Standard are contained within Section 0 - "Metadata". Extended elements may be defined as being a part of an existing section (1 - 10), or define a new section (11 - n).

- 2907 • Extended elements must not be used to change the name, definition, type, or domain of a standard element. In  
2908 particular, an extended element cannot be nested under a data element.  
2909
- 2910 • Extended elements may be defined as compound and may include extended and standard elements as  
2911 components. If a standard element is included in an extended compound element, no components of the  
2912 standard element are changed.  
2913
- 2914 • Extended elements, like the standard element “Single\_Date/Time” may appear in multiple places in the  
2915 metadata set.
  
- 2916 Extended\_Element\_Name -- (Mandatory) -- the name of the element. The name given to the element must not  
2917 be the name of any other element in the Standard.  
2918 Domain: free text (Do not duplicate any other Standard element name.)
  
- 2919 Definition -- (Mandatory) -- the definition of the element.  
2920 Domain: free text
  
- 2921 Rationale -- (Optional) -- the reason for creating the Extended element, and its expected uses.  
2922 Domain: free text
  
- 2923 Source -- (Mandatory) -- the name of the entity creating the Extended element.  
2924 Domain: free text
  
- 2925 Type -- (Mandatory) -- the kind of value to be provided, or “compound” if the Extended element contains other  
2926 elements.  
2927 Domain: integer, real, text, date, time, compound  
2928
- 2929 Domain -- (Mandatory) -- valid values that can be assigned to the data element. The same rules as those for  
2930 Standard elements are applied here.  
2931 Domain: free text
  
- 2932 Short Name -- (Mandatory) -- a unique short name consisting of eight alphabetic characters or less.  
2933 Domain: free text (Do not duplicate another short name used by the Standard or any other short name  
2934 in the Extension Registry.)
  
- 2935 Parent -- (Mandatory) -- The name of the element(s) under which this element may appear. The name(s) may  
2936 be standard or other extended element(s).  
2937 Domain: none, free text (Must be the name of an existing standard or extended element. If the  
2938 extended element is not part of any other compound element, its parent is the section name as defined by  
2939 the Standard. If the extended element is defining a whole new section, then its parent is Section 0 -  
2940 “Metadata”.)
  
- 2941 Child -- (Mandatory-if-applicable) -- The name of the element(s) which may appear under this element. The  
2942 name(s) may be standard or other extended element(s).  
2943 Domain: none, free text (Must be the name of an existing Standard or extended element.)
  
- 2944 Rule: production rule for the element, specified using the form given in this Standard.

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#### Guidelines for Creating a Profile for the Content Standard for Digital Geospatial Metadata

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The current Content Standard for Digital Geospatial Metadata provides metadata collectors with formally defined elements known as standard elements. The metadata Standard attempts to standardize the content of metadata elements for a wide range of digital geospatial data. However, some users may determine that modifications to the Standard are needed to create meaningful metadata for their data sets. The Standard allows the user to create extended elements and profiles. Extended elements are user-defined elements outside the Standard needed by the metadata producer. A profile is a document that describes the application of the Standard to a specific user community.

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A profile always contains the Standard, plus modifications to the optionality or repeatability of non-mandatory elements in the Standard. Modifications to the domains of standard elements can also be made where permitted by the Standard. Profiles may also contain extended elements.

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Profiles may be formalized through the FGDC standards process or may be used informally by a user community. FGDC is the approval authority for profiles. To become recognized by the FGDC, a metadata profile must go through the FGDC standards review and approval process. FGDC approved profiles must specify a maintenance authority. While the FGDC is the designated maintenance authority for the Metadata Standard the organization or agency sponsoring a profile will be considered the maintenance authority for that profile.

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Profiles may also be created for use with non-geospatial data holdings when this practice does not conflict with other Federal standards, directives, or statutes.

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#### Requirements

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A profile must include:

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- the basic, minimum set of metadata collected to the specification of this Standard

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- all mandatory elements in all mandatory sections. These are known as the core metadata elements

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- all mandatory- if-applicable elements in all mandatory sections, if the data set has the characteristic documented in the element

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- all mandatory elements in all mandatory-if-applicable sections if the data set has the characteristic documented in the section

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- all mandatory-if-applicable elements in all mandatory-if-applicable sections, if the data set has the characteristic documented in the section

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#### Guidelines

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The guidelines for creating a profile follow:

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- A profile must not change the name, definition, or data type of a standard element.

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- A profile may impose more stringent conditionality on standard elements than the Standard requires. (Elements that are optional in the Standard may be mandatory in a profile.)

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- A profile may contain elements with domains that are more restrictive than the Standard. (Elements whose domains

- 2979            have free text in the Standard may have a closed list of appropriate values in the profile.)
- 2980            •    A profile may restrict the use of domain values allowed by the Standard. For example, if the Standard contains five  
2981            domain values for a standard element, the profile may specify that its domain consist of three domain values  
2982            identified in the profile. The profile may require that the user select a value from the three domain values.)
- 2983            •    A profile will not permit anything not allowed by the Standard. (If the Standard element has a domain of three  
2984            values, without a free text element, the profile will not allow a user to enter anything other than those 3 values.)
- 2985            •    Before creating a profile, the metadata producer will check existing registered profiles.
- 2986            •    A profile submitted to the FGDC for formal approval shall contain the same nine sections as the overview section of  
2987            this Standard.
- 2988            •    A profile must be made available to anyone receiving metadata that was collected according to that profile.
- 2989            The format of a profile shall consist of the following:
- 2990            1.    Name of the Standard
- 2991            2.    Explanation
- 2992            3.    Approving Authority
- 2993            4.    Maintenance Authority
- 2994            5.    Related Documents
- 2995            6.    Objectives
- 2996            7.    Applicability
- 2997            8.    Specifications
- 2998            9.    Where to Obtain Copies
- 2999            10. A section saying that the mandatory elements from the Standard must be provided.
- 3000            11. A section describing the changes to the domains and conditionality of Standard elements being modified from their  
3001            original use in the Standard. These changes should be presented in the same manner used by the Standard.
- 3002            12. A section describing the extended elements created under this profile. This section must include all of the  
3003            components of an extended element described in the Standard.